

University of Dundee

## Legal and institutional aspects of integrated flood management

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# Legal and Institutional Aspects of Integrated Flood Management



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FLOOD MANAGEMENT POLICY SERIES

# Legal and Institutional Aspects of Integrated Flood Management

Geneva, Switzerland  
January 2006

ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

WMO-No. 997



The [Associated Programme on Flood Management \(APFM\)](#) is a joint initiative of the World Meteorological Organization and the Global Water Partnership. It promotes the concept of Integrated Flood Management (IFM) as a new approach to flood management. The programme is financially supported by the Governments of Japan and the Netherlands.



The [World Meteorological Organization \(WMO\)](#) is a specialized agency of the United Nations. It coordinates the activities of the meteorological and hydrological services of 187 countries and territories and as such is the centre of knowledge about weather, climate and water.



The [Global Water Partnership \(GWP\)](#) is an international network open to all organizations involved in water resources management. It was created in 1996 to foster Integrated Water Resources Management (IWRM).



Working within the auspices of the University of Dundee, the [International Water Law Research Institute \(IWLRI\)](#) seeks to develop and share knowledge and expertise in international, national and transnational water law and policy, through its research excellence, postgraduate academic programmes and advisory work.

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This publication forms part of the Flood Management Policy Series published within the framework of the WMO/GWP Associated Programme on Flood Management. The series comprises publications on various aspects of flood management policy, including economic, environmental, legal and institutional, and social aspects. The series is based on expert groups formed for each publication to guide and advise the preparation process, and on a wide review and consultation process in the framework of conferences and direct correspondence with leading sector professionals in the area of natural resource management and development policy. The series is published in English, French and Spanish.

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## PREFACE

Floods and law – two vastly different topics, which, at first glance, appear entirely unconnected. However, as the present study demonstrates, floods cannot be managed effectively without understanding the laws that apply, from local regulations (at the domestic/national level) to international treaties (at the international/sovereign State level). At present, when floods continue to pose significant and complex challenges worldwide, for both developing and developed countries, how can the international community cope more effectively with these demands?

Integrated Flood Management (IFM) has evolved as a concept, embedded within the broader context of Integrated Water Resources Management (IWRM), but with a distinctive flavour and practice. Integrated Flood Management aims to maximize the efficient use of flood plains while minimizing the loss of life from flooding. This approach represents a fundamental reorientation of how floods are perceived by society. This ranges from the “need to control” approach, where floods are considered to be threats as part of an uncontrollable natural cycle, to the “need to manage” approach, where floods are seen as part of a broader natural occurrence, with some beneficial elements, such as flood plains and related eco-resources.

In working towards implementing IFM, it has become apparent, both in theory and in practice, that a broad range of interdisciplinary and multisectoral inputs are required, across many areas of expertise. In this context there is a real need for an effective coordinating mechanism – some vehicle or medium that could identify, gather and utilize the inputs from all actors and concerned stakeholders. At the heart of this study is the notion that “law” can provide a framework for ensuring that this task is achieved. An effective legal framework identifies and protects the interests of all stakeholders, including establishing transparent and predictable mechanisms (legal rules and institutions) for managing floods. The institutional response of governments, nationally and internationally, can be clearly identified and governments motivated to act under a mandate created within a legal framework. The new conceptual approach discussed above, which recognizes that floods may be beneficial in some instances, that is to sustain ecosystems that depend upon flood plains, can be embodied in a legal framework, thus providing a means to identify and balance potentially competing interests.

This publication has presented the interdisciplinary research team with many challenges – how to approach floods and law in one coherent study? The challenges, however, have been most welcome, and provided a platform for innovation. This is the first work to examine the role of (water) law in the context of Integrated Flood Management. The result is a panoramic study of the necessary interfaces in this subject area, with a view to identifying best practices that might be studied in more depth. The final product has been primarily developed for, and is aimed at, the frontline, that is, those responsible for developing IFM – policymakers, flood managers and legal experts. All of these players are invited by this work to “think outside the box” and engage more proactively across disciplines and beyond their single sectors.

It is hoped that this study will assist in enlightening governments and stakeholders on how to use old, and continuing, problems to find new solutions. Integrated Flood Management, with law as an integral component, provides a pragmatic concept, which can be used to develop a more comprehensive and effective approach towards flood management. Under this new initiative, the Associated Programme on Flood Management, a joint initiative of the World Meteorological Organization (WMO) and the Global

Water Partnership (GWP), has joined forces with the International Water Law Research Institute (IWLR) at the University of Dundee to advocate the active adoption and further study of the evolving IFM concept. This important message must be communicated to all stakeholders and, most notably, to policy- and lawmakers. As a fundamental starting point for this message, the study presented in the present publication provides concrete examples of the interface between water law, policy and science in the area of IFM. If we are to meet the real challenges of the future, we must find new ways of working together. Let us together find new pathways of collaboration and cooperation, across sectors and disciplines, and seek to operationalize Integrated Flood Management, including law as an integral element, on the ground, recognizing the needs of all stakeholders. It is a compelling challenge for us all.



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## EXECUTIVE SUMMARY

Flood plains have always been subject to regular floods. These provide important water resources and fertile agricultural lands, which are essential for supporting livelihoods. Floods play a major role in replenishing wetlands and recharging groundwater, and are important factors in supporting agriculture and fisheries. This makes flood plains desirable areas for the establishment of human settlements and related economic activities. However, flooding may also have negative impacts on the lives and livelihoods of those who settle on flood plains, with disastrous results in some cases.

In recognition of the benefits of regular floods, the importance of flood plains and the increasing demands of development they are facing, and at the same time being cognizant of the fact that the disruptive nature of floods needs to be minimized if river basin communities are to achieve sustainable development, the Integrated Flood Management (IFM) initiative was developed by the Global Water Partnership (GWP) and World Meteorological Organization (WMO) under the auspices of the Associated Programme on Flood Management (APFM). IFM integrates land and water resources development with respect to flood management within the context of Integrated Water Resources Management (IWRM). Within a basin management context, it aims to make efficient use of flood plains, maintain the rich river basin eco-system and establish proper land use management and flood management systems to reduce the damaging impacts of floods.

An integrated approach to flood management calls for interaction between various disciplines, government departments and various sectors of society. There is a need for synergy between the actions of various stakeholders for the effective implementation of an IFM approach. Law, as a vehicle for orderly change, is considered to play a vital role in the effective implementation of IFM practices at the local, regional, national and international levels. The IFM approach expects various roles to be played by a complex set of actors to ensure coordination and cooperation across institutional and disciplinary boundaries. At the government level, whether national, regional or local, decision taking must be coordinated such that such decisions take account of any impacts on flood management and control. This “mainstreaming” of flood management might involve a number of government bodies, for example those responsible for spatial planning and land use (both users and planners); drainage; building regulation; environmental conservation and impact assessment; stakeholder participation, meteorological and hydrological forecasting and warning; and civil defence. This liaison is necessary across relevant ministries, departments and agencies at the decision-making level, but must also take account of vertical integration, that is, national plans, programmes and policies, and local representative bodies. The views of individuals will be essential in this integration, in order to ensure stakeholder participation and to reflect local expert knowledge and concerns. The involvement of industry, for example, insurers, lenders and developers, and agriculture and community organizations will also be critical in this process, requiring correlative efforts in terms of creating enforceable mechanisms for effective participation and ensuring that all relevant information is in the public domain. The development and dissemination of flood hazard maps is imperative in this regard. Creative thinking is required if flood management policies are to have proper effect, and it may be that indirect economic incentives or inducements may be put in place through legislative means.

Relevant bodies must be aware of their functions and role in flood management, and individuals must also be made aware of their responsibilities, rights and powers with respect to flood management,

whether at the planning stage, during flood events themselves, or in the post-event appraisal process. Standards of performance, along with clear delineation of duties, rights and powers of the various bodies involved, and appropriate for their respective functions, should all be set out in law. Similarly, detailed procedures and requirements regarding monitoring of compliance must be established, with correlative mechanisms for enforcement in place in the event that compliance is inadequate. The factors to be taken into consideration in decision-making must be systematically set forth to ensure transparency, with appropriate rights of independent review to reinforce accountability. In view of the differing interests of the various stakeholders involved in the development and utilization of a river basin and its land and water resources, the law also needs to provide appropriate mechanisms for the settlement of disputes at the national and international levels. National legislation must take account of international obligations where transboundary watercourses exist, and efforts should be made to ensure that communication between riparian States affected by floods is as effective and efficient as possible. This might involve harmonization of technology, addressing intellectual property concerns and the setting out of unambiguous triggers and resulting actions to be taken.

At the international basin scale, integration of IFM principles into wider frameworks for the utilization and protection of international watercourses would be required. The rule of equitable and reasonable use should be implemented, as a means of reconciling conflicting interests and balancing all relevant factors and circumstances. Procedural rules for the exchange of data and information should be implemented along with mechanisms for public participation. Joint commissions may also play important coordinating roles in promoting IFM at the international watercourse level. In relation to minimizing the detrimental effects of floods, the International Law Association (ILA) New York Rules and relevant State practice provide useful guidelines to follow in adopting appropriate measures. However, it is preferable that such measures be integrated into a basin-wide agreement capable of balancing the positive and negative aspects of floods.

In circumstances where extreme flood events have occurred, treaty practice indicates that many countries have not yet developed agreements that would optimize the emergency responses from non-affected States. Despite this, and a lack of specific treaty practice related directly to flood control and management, guidelines have been developed by the ILA with respect to mitigating and reducing the detrimental effects of floods. Guidelines on best practice have also been produced by UNECE.

The ethos underlying both of these sets of guidelines, and one that is underlined by the national experience, is that no single solution can be recommended for every country and that the “one size fits all” approach to making the most of flood events is not practical. With this in mind, however, the present publication suggests that if flood reforms are to be made at the national and basin levels, it may be possible to adopt a universal approach in order to ascertain the particular gaps in flood management strategies.

The Rapid Legal Assessment Tool attempts to address this need to identify the gaps in a country's flood strategy. It provides a framework for policymakers that allows them to identify all the legal instruments in force in their respective countries, from the local level to the international level. It then allows the testing of this legislative framework against the principles of IFM, and allows gaps to be addressed. It is intended to be used by countries wishing to address the issues of flood management in the most effective way possible, irrespective of wealth, climate and legal history. It provides an invaluable information resource upon which reform of flood management may be solidly based.

## ACKNOWLEDGMENTS

This publication has been developed on the platform of the WMO/GWP Associated Programme on Flood Management (APFM) as a joint effort with the International Water Law Research Institute (IWLRI) at the University of Dundee and in consultation with a wider group of legal experts and other water sector professionals. As such this publication owes a considerable debt to a number of people.

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- Ms Cecilia Tortajada, Third World Centre for Water Management, Spain
- Mr Videh Upadhyay, Supreme Court Advocate, India

This publication draws much information from case studies on the respective legal and institutional set-up for flood management in several countries. These case studies are published separately and have been prepared by Dr Slavko Bogdanovic for Serbia and Montenegro, Dr Armin Petrascheck for Switzerland, Prof. Kamta Prasad for India, and Prof. Kenji Sanbongi for Japan. The experience from the case studies is widely referred to in the present publication and as such forms the base to underpin analytical results to give readers points of reference to follow up on particular suggestions.

## ACRONYMS

APFM	Associated Programme on Flood Management
AWRA	American Water Resources Association
CFMC	Community flood management committee
DEFRA	Department for Environment, Food and Rural Affairs, UK
EIA	Environmental Impact Assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GWP	Global Water Partnership
IFRC	International Federation of Red Cross and Red Crescent Societies
IFM	Integrated Flood Management
IIL	Institute of International Law
ILA	International Law Association
ILC	International Law Commission
IWLRI	International Water Law Research Institute
IWRM	Integrated Water Resources Management
NGO	Non-governmental organization
NMHSs	National Meteorological and Hydrological Services
OECD	Organization for Economic Cooperation and Development
RLAT	Rapid Legal Assessment Tool
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SIC-ICWC	Scientific Information Centre of the Interstate Coordination Water Commission
UNTS	United Nations Treaty Series
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WFD	Water Framework Directive (European Union)
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WTO	World Trade Organization
WUA	Water User Association

## INTRODUCTION

### Floods and development policy

Floods are part of the natural cycle and provide definite beneficial effects. Flood plains provide fertile lands capable of supporting high-yield crops. By providing rich natural resources, flood plains have attracted humankind for centuries. Flood events can also benefit ecosystems by maintaining fish spawning areas, helping fish migration and flushing debris, sediment and salt.<sup>1\*</sup> However, population increase, urbanization, agricultural practices and deforestation have meant that society is becoming increasingly vulnerable to the adverse impacts that flood events can cause.<sup>2</sup> From 1992 to 2001 a reported 1.2 billion people were affected by and 96 500 were killed due to flooding.<sup>3</sup> The adverse impacts of flooding include loss of life and property; mass migration of people and animals; environmental degradation related to the spreading of pollutants by means of floodwaters; and a shortage of food, energy, water and other basic needs.<sup>4</sup> Moreover, a greater probability of flooding is foreseen in parts of the world as a result of human activities and the predicted change in climate variability, in particular owing to changes in the frequency, intensity and duration of heavy precipitation events.<sup>5</sup>

The need to prevent and mitigate the adverse impacts of floods is well recognized at the highest level. Numerous ministerial declarations acknowledge the importance of the issue. For example, the 2000 Ministerial Declaration of The Hague on Water Security in the 21st Century stated that providing security from floods, droughts, pollution and other water-related hazards was amongst the main challenges faced in achieving water security.<sup>6</sup> Various global “action plans” have also recommended measures for flood prevention and mitigation. In 1992, Agenda 21 recommended that States implement flood and drought management strategies as a means of improving Integrated Water Resources Management at the national level.<sup>7</sup>

### Integrated Flood Management

Traditionally, flood management has focused on defensive practices but it is widely recognized that a paradigm shift is required from defensive action to the proactive management of risks due to flooding. The need for this paradigm shift is the inspiration behind the concept of Integrated Flood Management, which seeks to integrate land and water resources development in a river basin within the context of IWRM, and manage floods based on risk management principles in order to optimize the net benefits from flood plains while minimizing the loss of life from flooding.<sup>8</sup> The following are the five essential elements to IFM:

- To manage the water cycle insofar as it relates to land, as a whole;
- To integrate land and water management;
- To adopt a best mix of strategies;
- To ensure a participatory approach;
- To adopt integrated hazard management approaches.

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\* Superscripts indicate the number of the endnotes given at page 73 onwards.

These processes should be put into practice in such a way as to create a resilient community through a best mix of short-term and long-term measures comprised of structural and non-structural interventions, with the active involvement of all stakeholders and the community at large.

Being an interdisciplinary pursuit, flood management calls for the seamless interaction between various disciplines, government departments and various sectors of society. There is a need for a change in the sectoral outlook of development so that the synergies between the actions of various stakeholders are maximized for the most effective implementation of an IFM approach. To be successful IFM should be based on a firm legal framework and supporting institutional arrangements. Figure 1 represents the roles that a legal framework plays in the implementation process of flood management policies. It also indicates that the IFM approach expects various actors to participate so as to ensure coordination and cooperation across institutional boundaries.

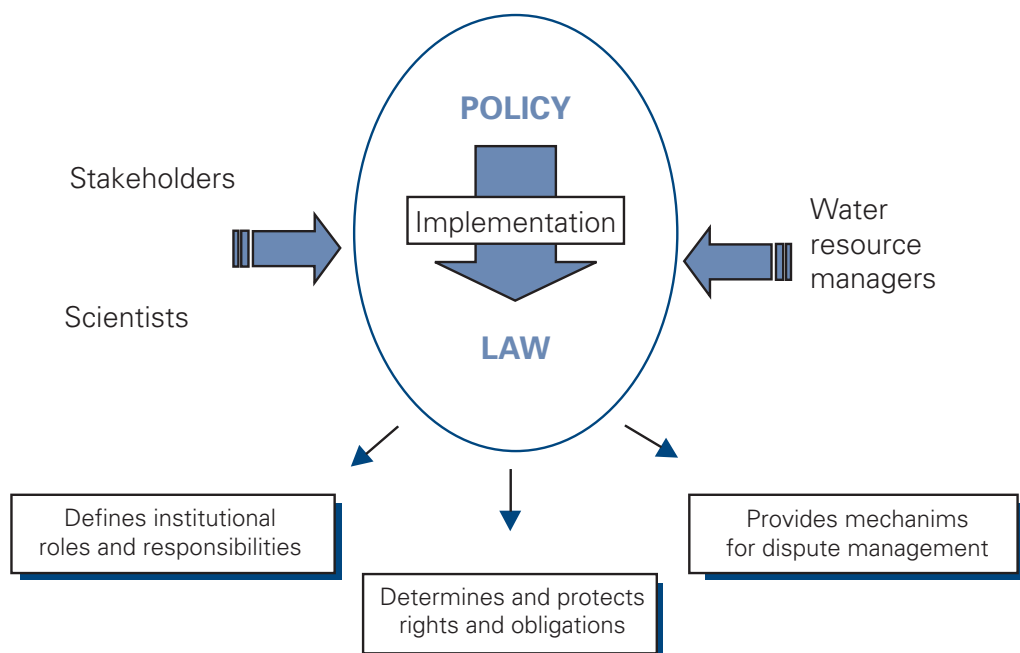


Figure 1. Roles of law

The present publication seeks to raise awareness of policymakers regarding the need for an appropriate legal framework for IFM, thereby providing guidance to legal experts on how to incorporate IFM principles in legal practice. Additionally, it intends to motivate and enable flood practitioners, stakeholder groups, including those groups and individuals involved in increasing public involvement in civil society, such as NGOs and the media, to engage in dialogue with policymakers on the relevant legal requirements and the best approach to establishing a balanced legal framework for the implementation of IFM.



## Reader's guide

The present publication is divided into three parts. Part A addresses issues related to legal and institutional requirements at the national level, which broadly includes ensuring integration and coordination, information generation and management, enabling stakeholder participation. It also addresses the importance of the enforceable delineation of rights, powers and obligations. Part B provides information on the law of international watercourses and selected treaty practice related to flood management, and outlines the appropriate legal framework that should be considered in order to promote IFM at an international watercourse level. Part C provides a methodology, the Rapid Legal Assessment Tool (RLAT), which will enable countries to test their existing legal frameworks for compatibility with the concept of Integrated Flood Management and guide an appropriate reform process.



# part A



## LEGAL AND INSTITUTIONAL REQUIREMENTS OF INTEGRATED FLOOD MANAGEMENT AT THE NATIONAL LEVEL



## LEGAL AND INSTITUTIONAL REQUIREMENTS OF INTEGRATED FLOOD MANAGEMENT AT THE NATIONAL LEVEL

The law relating to IFM must clearly establish a framework that defines the rights and obligations of institutions and individuals at both the planning and operational phases of all stages of a flood event – before, during and after. At the same time it also needs to provide an equitable framework for development among different sectors of society, including present and future generations, to duly respect the principles of IFM and take account of the need to maintain the life support system provided by natural resources. This framework may address resource sharing, financial support and other practical measures. In addition to general developmental issues, a legal framework should provide for the following specific issues:

- Coordination and cooperation between the various organizations, institutions, sectors and users;
- Availability and accessibility of the basic data and information for informed decision-making;
- Building an enabling environment for all stakeholders to participate and make collective decisions.

Law, as a vehicle for orderly change, is seen to play a vital role at the local, regional, national and international levels. While it is only one of a number of influences on flood management, law has the potential to play a major role in the achievement of a properly Integrated Flood Management regime. The considerations that must be taken into account in the various decision-making and planning processes should be set out in law, along with details of the relevant procedures that must be followed. The role of a legal regime in land and water use management is critical to the success of IFM, and can influence the behaviour of many other agencies that might otherwise have little to do with implementing flood management programmes. The law can protect and entrench the rights of interests that might otherwise have little or no influence over decision-making, such as the poorest sectors of society and the environment. Without an appropriate legal regime, accountability and transparency cannot be put in place, and the rights, powers and obligations of all actors involved, along with relevant standards of performance, cannot be clearly and unambiguously set out.

It should be remembered that a number of ethical and policy questions must be addressed before the law can be formulated. For example, how much flood protection is a State prepared to pay for? Will it protect property owners against a once in a century event, or accept a lower threshold? How much responsibility is to be given to individual property owners for their own protection? To what extent should economic instruments rather than hard regulation govern flood management? These and many other questions must be given serious consideration before any necessary legal reform takes place.<sup>9</sup>

Finally, it is worth noting that decisions regarding the level of flood risk that a State is prepared to accept will be fundamentally political in nature, and this will be reflected in any correlative

legislation or planning. It is essential that all stakeholders are involved in the setting of this level in order to ensure that as wide a consensus as possible is achieved.<sup>10</sup> Governments may also be bound to adopt a precautionary approach when planning with respect to environmental problems, their obligation deriving from international agreements or more directly through domestic legislation.

The application of the precautionary principle may have a bearing on the flood management measures taken by States. Box 1 presents the concept of the precautionary principle.<sup>11</sup> It may also have a role in government planning in States that do not possess accurate flood risk maps, that is where the science is unclear, although this may be a luxury that is beyond the means of many such States. UNECE, in its *Guidelines on Sustainable Flood Prevention*, recommends that flood prevention measures should be underpinned by the precautionary principle, although it does not provide further guidance as to how this should be applied in practice.<sup>12</sup>

### **Box 1. Precautionary principle**

The precautionary principle can broadly be defined as the imposition of “controls in advance of complete scientific understanding.”<sup>13</sup> In the context of environmental protection, Principle 15 of the Rio Declaration provides that:

“where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

A precautionary approach could equally be taken with respect to the protection of human life or property. Article 3(3) of the United Nations Framework Convention on Climate Change<sup>14</sup> states that:

“The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.”

## 1. ENSURING INTEGRATION AND COORDINATION

Integrated Water Resources Management is now widely accepted to be the best way of ensuring that water resources management is administered in a sustainable manner.<sup>15</sup> An integrated basin approach is recognized as a key requirement to reduce flood risk.<sup>16</sup> This concept has been encapsulated in legislation in many countries, notably South Africa<sup>17</sup> and Australia<sup>18</sup> and in the European Union Water Framework Directive.<sup>19</sup>

If flood management is to be carried out within the context of IWRM, flood management decisions must take into account not only their effect on flood risk alleviation, but also of the resulting economic and environmental impacts. Consequently, the planning and decision-making processes of a number of separate development authorities, whose decisions in any form influence the hydrological response of the basin, must be coordinated to ensure that the common goal of sustainable development is achieved. Those decisions have the potential to affect flood magnitudes and consequently the flood risks and have the potential to influence the vulnerability of the society to flood hazards. In addition, decision-making processes for other development activities must take into account flood risk because of their potential to affect the hydrological response of flood plains. There are two aspects: first, planning at the governmental level must be integrated so that the government's strategy, implemented through different departments, is coherent and harmonized. Second, it must be applied at all levels of public planning, whether national, regional or local, and involve all relevant public agencies. At the same time, there should be some mechanism to ensure that local views and experiences are in turn communicated to national planning processes.

Figure 2 presents the horizontal and vertical interactions, thereby integrating various stakeholders and interest groups, along with the integration of flood management into all relevant areas of government planning, as follows:

### Horizontal:

- Between the various government departments and ministries (at all levels);
- Involvement of the stakeholders and interest groups in decision-making processes.

### Vertical:

- Consistency in the policy and planning processes and implementation at different levels of government, that is, from the local level up, plans should be consistent with those produced at the next higher level.

The consultation exercises with respect to these plans and programmes must involve all relevant stakeholders. Although all stakeholders are included in Figure 2, they can vary from country to country.

### 1.1 Integrating public planning processes

National practices as to which ministry is given the responsibility for flood management vary considerably. Further, the roles vary between those responsible for planning, for operation and



maintenance of flood defences and for forecasting and warning services, and those in charge of disaster response. The following indicates the principal ministries that may be involved in decision-making with the potential to affect flood management:

- Environment
- Nature conservation
- Forestry
- Water resources
- Agriculture
- Spatial and land use planning
- Interior
- Health
- Civil defence/security
- Transport
- Construction

Based on the political and administrative set-up in a country, the direct responsibility for flood management may rest with the federal or local government. The primary responsibility for national policy, guidelines and framework legislation may lie with the central or federal government, while detailed regulation, implementation, operation and maintenance of flood management measures may lie with subnational administrative units.

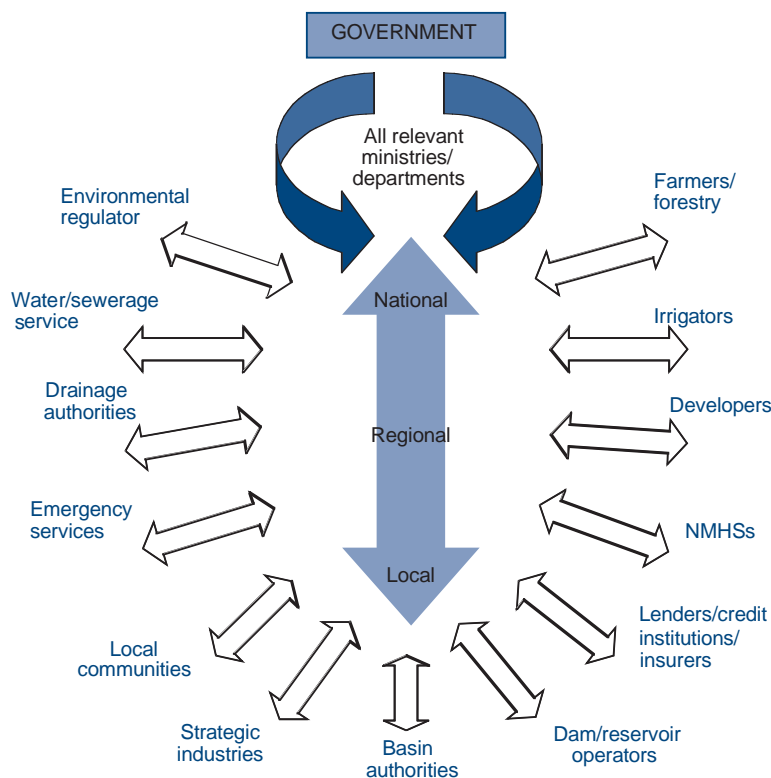


Figure 2. Integration of the various stakeholders and interest groups in flood management

In emergency situations, responsibility for the response often lies with interior ministries or specific ministries devoted to civil defence.<sup>20</sup> The subsidiarity principle<sup>21</sup> is applied in many instances, for example in the context of federal nations, to induce action at different levels of government, depending on the scale of the flood impact. A clear and unambiguous institutional framework is required to manage the interfaces between different layers of government in flood emergency situations to minimize the response time at the appropriate levels. It should

also be noted, however, that in any emergency situation the success of operations is also determined by the type of political leadership provided.

In Japan, the Minister of Land, Infrastructure and Transport is charged with the role of river administration for large water systems (class A rivers) while prefectural governors are responsible for the others (class B rivers). However, at times of flooding, the responsibility lies mainly with the municipality to take action for flood defence and to mitigate the impact of floods. The overall management of all natural disasters is based on the law that clarifies the responsibility of the State, local governments and the public. It is the responsibility of the State to take emergency measures in the event of a large-scale disaster. The Cabinet Office undertakes administrative duties for disaster management and coordinates the activities of ministries and agencies under the Basic Law for Disaster Countermeasures of 1961. Each ministry and agency that is designated for disaster management must formulate and execute a disaster management operation plan according to the basic disaster management plan. The local government has the responsibility for emergency response and has to formulate a disaster management local plan.<sup>22</sup>

In Switzerland, the role of the federal government is largely limited to the provision of financial, scientific and technical support, with cantons and communes taking on the principal duties of emergency management.<sup>23</sup>

In order to ensure that government planning under various sectors is harmonized and takes into account flood risks, where appropriate, strategic plans and policies originating in all areas of development should be assessed to determine whether or not they will have impacts on flood risk. Different approaches to coordination at various levels can be taken based on the experience within the country in the water or any other related sector. For example, a comparable programme of integration has been put in place in the EU with respect to impacts on the environment.<sup>24</sup> Although at this stage it is difficult to gauge its success, a similar programme with respect to the impact on flood risks, if put in place, would be helpful in bringing together all the elements involved. Much will depend on finding a consensus between the development needs of the concerned area and the flood risk the society is willing to accept or able to sustain. The guiding principle in this decision from an IFM perspective should be to seek to maximize the net benefits derived from using the flood plains while minimizing loss of life.

In Scotland, the system works by having the originating authority carry out its own preliminary assessment, which is then measured against a series of predetermined criteria in order to evaluate whether or not its plan is likely to have significant environmental impacts.<sup>25</sup> This preliminary assessment is then passed to the bodies that must be consulted via a central coordination mechanism. These bodies, which include all ministries, the agency responsible for natural heritage and the environmental regulator,<sup>26</sup> then decide whether or not a full assessment is required. The legislation sets out all the foregoing information, along with the relevant timescales involved and details of required publicity measures.<sup>27</sup> Such a system, when applied to impacts on flood risks, would address integrating decision-making at the policy level and have a positive effect on flood management at the operational level.

Another method has been adopted in South Africa, which has established disaster management centres at national, provincial and local levels in order to monitor the extent to which those authorities with responsibilities relating to disaster management have planned for their responses and taken account of all relevant interests.<sup>28</sup> In addition, the Disaster Management Act establishes two new bodies: an Intergovernmental Committee on Disaster Management, representing ministers and local government officials with responsibilities relating to disaster management,<sup>29</sup> and a National Disaster Management Advisory Forum, representing stakeholders as well as government officials.<sup>30</sup> The former body is charged with advising and making recommendations to the cabinet on integrating disaster management, and more particularly, the national disaster management framework,<sup>31</sup> and receives advice from the Advisory Forum.<sup>32</sup>

## 1.2 Land use regulation

Given the enormous influence of land use on flood risk and water management in general, it is imperative that land use planning and water use allocation are properly coordinated. Land use in both urban and rural areas can affect flood risk elsewhere in the basin. The consequences of forestry and especially uncontrolled logging on flood risk can be significant, in particular concerning the erosion processes and to a limited extent and locally on flood peaks. The consequences of agricultural land use practices, such as topsoil compaction, may also have similar deleterious effects on downstream river regimes. Consequently, forestry policy and planning should be subject to flood risk assessment. The technical aspects of forestry and agricultural practices may also be subject to regulation but may be more difficult to enforce. In some countries, binding legislation or voluntary codes of conduct are used to influence such practices, for example, to encourage landowners and users to avoid soil compaction as far as possible, or to suggest that planting takes place in rows following local contours rather than perpendicular to watercourses. It should also be noted that land use may be determined to some extent by economic mechanisms, which may not be conducive to good flood management. Certain uses of land can be beneficial to flood management, for example, the upstream use of rice paddies,<sup>33</sup> and it may be possible to encourage such uses through the planning process and incentive mechanisms. Control of land use normally takes place at the local level, in conjunction with government policy and existing planning legislation.

### ***Flood hazard maps***

Flood hazards maps contain the basic information on the magnitude of flood hazards within a basin and are the starting point of land use planning and regulation. Such maps should not only demarcate the extent and magnitude of flooding but also the sensitivity of such demarcations to various land uses and drainage conditions. Based on the hydrometeorological and physiographic information of the basin and the drainage capacities of the watercourse, flood hazard maps should be developed by national hydrological agencies, indicating the areas at risk of flooding from surface waters. This should also take into account information from drainage

authorities regarding the properties and capacity of the drainage infrastructure available in particular areas. The availability of flood hazard maps to various organizations and departments, along with all relevant stakeholders, should be ensured by identifying and mandating appropriate agencies.

In order to integrate flood management and land use, planning authorities must identify and take into account those factors that increase or affect the risks of flooding when making decisions regarding new developments, changes of land use and new structural flood controls. This obligation may be set out in legislation or, as is the case in some countries,<sup>34</sup> in binding policy documents from the government (which have been through the processes outlined above in relation to government integration). Legislation or policy documents may set out the bodies that must be consulted with respect to certain types and magnitudes of proposed development, along with those that have a right to have their views considered. Where reliable flood hazard maps are in place, the presumption should be that planning authorities do regulate development in areas of high risk. This presumption may be rebutted in some cases, for example where government policy demands strategic regeneration, but preventive measures will have to be implemented to protect such sites, and these measures must not increase flood risk elsewhere.

### *Drainage capacities*

Catchment-based management of watercourses encourages the incorporation of land use impacts in watercourse planning, and provides a good foundation for assessing flood risks properly. Flood risk is also affected by the condition of watercourses, especially drainage conditions. Drainage congestion may cause flooding in certain areas. Flood risk maps must take account of drainage capacity, and although they will have to assume that watercourses are unaltered by debris or other blockages, it is essential that a body is identified and made responsible for their maintenance and is enabled to fulfil its duties. As drainage capacity will be an integral element of new developments such as bridge construction, it is imperative that this body is consulted on respective developments.

The broader question of drainage in the context of irrigation should also be addressed with irrigation groups. The actions of both urban and rural land users may potentially exacerbate or alleviate flood flows, however land users also suffer from their damaging effects. Where irrigation networks are in place, the needs and practices of farmers must be taken into consideration. Water user associations (WUAs), for example, should be able to have their views considered. Legislation on irrigation management might include an advisory function for WUAs with respect to basin planning. WUAs might also be required under their constitutive documents to draw up emergency procedures for flood events, which are consistent with basin flood management policies and plans.

In some countries, local flood groups have been established, although their level of responsibility varies. Representative water boards in the Netherlands are designed to be self-financing and take responsibility for local flood control along with wider water management.<sup>35</sup>

These bodies may be less formal elsewhere, but the information received from local groups that are more familiar with watercourses than may be possible in central administrations is invaluable in flood management.

### ***Incentives and disincentives***

Where mandatory flood insurance is required, insurers may be approached by developers in advance of an application for a development permit. It is unlikely that the development would proceed if insurance is refused or the premiums are very high owing to the risk of flooding. For example, in the United States of America, in order to ensure that adequate flood management plans are in place, local governments are given the choice of participating in the National Flood Insurance Program and thereby being eligible for federal aid following a flood event.<sup>36</sup> They will only be eligible if they maintain flood plain control programmes, and a number of financial incentives are in place to encourage participants to exceed the required standards. An alternative tack has been to prohibit regulated lenders from providing mortgages for developments in certain areas.<sup>37</sup> It remains to be seen if changes are made to this system following Hurricane *Katrina*.<sup>38</sup> Although flood insurance is seldom mandatory, problems can occur in States where insurance is optional.<sup>39</sup> In such situations, insurance is bought solely by those who are aware that they are at risk and have experienced flooding in the past. Consequently, the premiums are expensive, thereby further discouraging others from buying insurance. Unfortunately, in the developing world insurance is not an option for the majority of people, who will consequently bear the cost themselves, as they cannot rely on government aid.<sup>40</sup>

It may be the case that the water use allocation regime in place in a particular country allows the allocating body to review water use permits during times of flood, with a view to temporarily suspending certain permitted uses that would be detrimental to flood management, although this is more likely to relate to discharges of water from reservoirs and wastewater discharges than abstraction licences. The impact of pollution during flooding may be more damaging in such circumstances and might therefore be subject to regulation.

### ***Environmental impacts***

Another important factor that must be taken into account in flood management is environmental concerns. Structural works usually have an impact on the ecology of a watercourse and the adjacent land. Flood management plans must be in line with the need to protect specific areas set aside for the conservation of natural heritage, for example in special areas of conservation, national parks or Ramsar wetlands.

An additional factor that should be considered as part of land use planning and building regulations relates to situations where floodwaters might potentially come into contact with land-based contaminants. Existing sources of pollution on active flood plains, such as industrial premises, wastewater and sewage treatment plants, car parks and domestic central heating

oil storage tanks should, where possible, be protected to withstand the effects of flooding. To obviate the problems associated with the diffusion of hazardous materials, the new development of such sources should be avoided as far as possible. The input of toxic substances from diffused pollutants, for example through the spreading of pesticides or sludge in arable farming, also needs to be taken into account. Legislative approaches (see Box 2), economic tools and best practice guidelines<sup>41</sup> may be used to control diffuse pollution, with the latter two often being viewed as the more cost-effective options.

### **Box 2. German Act to Improve Preventive Flood Control**

In Germany the Act to Improve Preventive Flood Control came into force on 10 May 2005 (Federal Law Gazette I of 9 May 2005). The act amends several Federal Acts (Water Act, Building Code, Regional Planning Act, Waterway Act, Act on the German Meteorological Service). It regulates stricter, more precise and identical provisions for flood prevention throughout Germany. Among others, the following provisions are worth mentioning:

- It is the duty of all to prevent flood damages as far as possible.
- The 16 German federal states (Länder) have to determine waters or water segments where flood damage has occurred or is expected to occur. For those waters, flood plains must be legally designated within five (high potential of damage) to seven years. The basis for the designation is a flood event that is expected to occur once every 100 years.
- Within the designated flood plains: the law of the federal states shall stipulate, for example, how to deal with hazardous substances, especially oil heating systems, and how to prevent or alleviate possible soil erosion and inputs of pollutants. The Act regulates and forbids new development sites by land use plans. An exemption is only possible if nine strict conditions are met, including no alternatives for human settlement, no risk to life, significant health damage and material loss. If the Building Code allows buildings, for example because there is already a land use plan, an additional licence is necessary to prevent negative impacts on flood protection.
- The public and municipalities shall be warned through the designation of flood-prone zones, especially areas behind dykes or other flood protection devices.
- Flood control plans should be established within four years, if no such plans exist. These plans shall cover aspects such as control of water runoff, technical flood control, measures to preserve or restore retention areas and relocation of dykes.
- The Act regulates the cooperation in river basin districts with regard to coherent flood prevention.
- Designated flood plains and flood-prone zones have to be illustrated in land use plans and spatial planning.

See the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety website at <http://www.bmu.de/english>, and follow the links "Waste, Soil, Water" and then "Water Management".

### ***Basin commissions***

Where political and administrative boundaries do not coincide with basin boundaries and land use controls are the responsibility of the local government, the formation of basin commissions provides a viable option for the coordination and harmonization of development activities and



for involving the various stakeholders. Specific arrangements should be established for local government coordination particularly on transboundary catchments, within the terms of any relevant international agreement applicable to the watercourse.

Although from an IFM perspective it would be desirable that political borders coincided with basin boundaries, that is not always the case. Nevertheless, interventions for better flood management should always be based on hydrologically determined units. Even in States that recognize basin level authorities there is a need to ensure the horizontal and vertical integration of functions of the formal and informal institutions at both the sub-basin level and above. In fact, from both substantive and strategic standpoints, there is a need to optimally utilize the existing legal spaces and work with the legally mandated authorities to use their reach and influence for planning and conflict management, along with education and awareness, and even research data sharing.

## 2. INFORMATION GENERATION AND SHARING

There is an important need for robust notification and information sharing processes in environments where basin boundaries differ from the administrative boundaries. Flood management strategies should be based on scientific data gathered by a number of agencies. Furthermore, these strategies must be reviewed in the light of the experiences of new flood events. Mechanisms must therefore be in place to feed basic planning data and assessments of actual performance back into the strategic planning process.<sup>42</sup> Various types of information that are generated in the monitoring process are required for preparedness planning as well as for the development of emergency responses.

### 2.1 Preparedness planning

Raising the awareness of property owners and stakeholders on the risks of flooding is of paramount importance. If stakeholders fail to understand the risks to which they are subjected, they are less likely to participate in the planning process. The flood hazard maps, plans, programmes and strategies form the basic information that should be made available to all stakeholders as part of the efforts to ensure pre-flood participation. These, along with the related timing and background information that are subject to public scrutiny, must be available and accessible to the public without the need to demonstrate an interest.

Information is only useful if it is readily available to those who have a right to have it and should effectively be made available and accessible to as large a proportion of the population as is practicable. When making the information available to the general public, consideration needs to be given to the following:

*Location:* consultation documents must be available in places that are physically accessible to the public to which they are directed. They should be available locally and in a location that is accessible to all, for example in a public library or the office of a local representative body. If members of the public are forced to travel long distances to view or obtain documentation, they are less likely to do so.

*Form:* documentation should be available in a media format that is the most likely to be available to the public. This will include paper copies and also electronic copies available on the Internet or CD, for example.

*Time:* consultation documents should be open for viewing at reasonable hours. The time allowed for consultation responses should also be sufficient.

*Cost:* no fee should be charged for access to documentation, although reasonable administrative fees may be charged when requests are made for copies of the relevant papers or their electronic counterparts.

*Comprehensibility:* non-technical summaries should be provided, and documents should be available in the local language, at least in summary form, in addition to the State language, if different.

*Intimation:* members of the public must be aware that they have a right to respond to consultations and that such consultations are taking place. The usual means of communicating this to the public is through advance media advertisements and newspaper notices.

## 2.2 Emergency response

The effectiveness of flood and emergency warnings is governed by similar considerations, as the aim is to reach as many people as possible in the area that is expected to be affected. The success of flood warnings is dependent upon their coverage and reliability, as well as the ability of the population at risk to receive and adequately react upon a warning, in addition to the effectiveness of the action taken.

The body or bodies responsible for issuing flood warnings should have clearly defined responsibilities and the resources and technology commensurate with carrying these out. Escalation procedures will also need to be clearly set out to take into account the magnitude of the event.<sup>43</sup> In addition, the consequences of failing to issue a warning, or issuing a late warning, is required to be clarified by law.<sup>44</sup> Within the legal realm, another issue that should be considered in addressing flood issues is the decision-making and communication processes related to the evacuation of areas in imminent danger of flooding. Procedures must be in place and backed by laws that specify the competent authority or institutional level for that decision and that equip authorities with the legal means to enforce an evacuation order and maintain law and order in evacuated areas. For example, the responsibility for declaring a state of emergency in the affected area will need to be clarified in the relevant law. In the course of an evacuation, questions arise as to whether or not authorities will be obliged to provide security for assets left behind by the evacuees.

States normally use various media, including television, radio, the Internet and the telephone, to warn of impending emergencies. The choice of medium is likely to be left to the agencies charged with providing flood forecasts and warnings,<sup>45</sup> as developments in communications technology are best followed if flexibility is incorporated in policy.<sup>46</sup> Such agencies may be under a more general statutory obligation to publicize information relating to flood risk or flood warnings as part of the definition of their functions.<sup>47</sup> Warnings must be in a language that the local population will understand, and must take into account literacy rates and the media available in the affected area.

The use of the media in disseminating flood warnings and emergency bulletins demands that correlative responsibilities are imposed upon broadcasters. This is less likely to be a problem in countries where the State-owned broadcaster has a monopoly than in countries where there are commercial stations. The legislation governing commercial broadcasting might set out the

responsibility to broadcast public service or emergency bulletins, or such a restriction may be contained in the relevant broadcasting licence, assuming such a licensing system exists. For example, the Meteorological Service Law<sup>48</sup> in Japan stipulates that the Nippon Broadcasting Corporation (NHK), which is the “designated public corporation”, is obliged to broadcast forecasts and warnings. The law also stipulates that the Japan Meteorological Agency shall request the cooperation of the media to make information known to the public.

### ***Notification and communication***

In addition to the issue of warnings disseminated to the public by the emergency authority, there are questions as to *which* agencies should receive *what* information and *when*. National practice around the world varies with respect to the authorities, who are responsible for the practicalities of flood emergency response coordination.

The practice will differ from country to country, depending on its degree of decentralization, as this may impose a greater number of administrative layers. For instance, as is the case in France, there may be additional flood forecasting bodies at the regional level. The passing of information and the timing will depend on the duties assigned to particular bodies, which will be set out in legislation, however the detailed procedural aspects will be covered by agreements or memorandums of understanding between these bodies according to their own internal procedures or by-laws. Confirmation that such procedures and agreements are adequately robust to cope with actual emergencies should be sought through regular exercises, the frequency of which may be laid down in secondary and sometimes primary legislation. Comprehensive notification procedures will be especially important in circumstances where notification and information across political boundaries will be critical.

### ***Data collection***

As far as possible, it is desirable that the nature of the meteorological and hydrological data collected at a national or basin level, and the tools used to collect these data, are consistent. This will increase the scope for incorporating international data into national or basin modelling systems and maximize the benefits derived. Where National Meteorological and Hydrological Services (NMHSs) exist, this should only be an issue in the context of a transboundary watercourse. In such instances, any agreement between the basin States should address information transfer. It may be that it is more efficient for upstream national meteorological organizations to communicate data directly to the hydrological bodies in other basin States. This would ensure that the downstream State did not have to rely on the discretion of the upstream nation to pass on information that might affect downstream flood risk; interpretation of the raw data would remain with the downstream State. Data flows should not be limited to one-way communication, however. It may be that downstream flooding, for example of a lake behind a dam in the downstream State, will affect the upstream State and the latter will have to rely on data, both meteorological and hydrological, provided from downstream. In such contexts, basin-wide organizations responsible for collating data may be formed or if in existence charged with such responsibility.<sup>49</sup>

As to the national situation, problems may arise in countries that have separate hydrological monitoring bodies in each region or constituent state, especially where there are watercourses that cross the borders of more than one of these regions. The national government will normally be responsible for ensuring that data collection methodologies are consistent across all regions, through legislative instruments if considered necessary.

Flood risk is normally calculated by multiplying the statistical probability of flooding with the consequences of that flood.<sup>50</sup> It is therefore only accurate if updated regularly to take into account the changes in flood patterns, value of potentially affected property and number of people likely to be harmed. This is particularly important in the light of the expected impacts of climate change and increasing urbanization.<sup>51</sup> Such an obligation to update this information should be provided for in the by-laws of the respective agency or in secondary legislation.

An additional obligation with respect to data collection relates to post-flood assessment. If lessons are to be learned from flood events, it is crucial that the planning agencies appreciate the precise circumstances that led to a particular inundation, including the hydrological and meteorological conditions in place at the time. The post-flood information, comprehensive details of which may be contained in appropriate legislation, should also assess the performance of flood defence structures and the statistics relating to the loss sustained as a result of flooding. Obligations should then be placed on policymakers to make any changes that such information necessitates. To increase the comparability of flood damage data, standards for damage assessment should be considered and the competent authority charged to undertake this type of assessment.

### ***Database protection***

With respect to the data collection activities and database collation by National Meteorological Services, a potentially problematic issue has arisen recently. In the EU, Directive 96/9 on the legal protection of databases<sup>52</sup> gives the owner of the databases, even if these are “non-original”,<sup>53</sup> the rights of copyright over that database. A number of other countries are interested in protecting such databases because of the income generating potential, and the World Intellectual Property Organization (WIPO) has also been discussing the matter in recent years.<sup>54</sup> However, in the United States, for example, such databases are not copyrightable and thus the information contained in them is freely transferable. If the databases of a National Meteorological Service were subject to that institution’s copyright, the information could not be passed on without its permission. It has been argued that this could have major ramifications on the availability of data in the developing world. As many developing countries use information available from sources beyond their borders, they may have no choice but to pay for these data. The lack of resources may therefore result in flood risk alleviation being sidelined, with consequent effects on the safety of the population. Even in States that produce their own data, there could be impacts on the use of the data by the various agencies, as these may require a permit when they need to use the data as part of national flood management activities. The issue remains unresolved, but should be borne in mind.

The issue of database protection is also closely linked to the fundamental question of the privatization of services such as data collection and management, including the maintenance of measuring networks. It is essential to carefully assess the strengths and weaknesses of public or privately managed networks and in any case ensure that access of the public to environmental data remains feasible.



### 3. ENABLING STAKEHOLDER PARTICIPATION

Stakeholder participation is integral to the IFM concept. If the aim of IFM is to maximize the net benefits that may be derived from flood plains while minimizing the loss of life and property, it is imperative that all stakeholders are involved in the decision-making processes that affect flood management. The level of participation of the different interested groups may vary both in terms of degree and in the level at which it occurs, whether national or local, but without effective participation IFM cannot hope to succeed.<sup>55</sup>

The realization that the participation of stakeholders in flood management is necessary leads to a number of questions, as follows:

- Who are the stakeholders?
- In which decisions should they be involved?
- What information should be provided, and how, if effective participation is to be achieved?
- How much consideration should be given to stakeholder views?
- What rights, powers and obligations should the stakeholders and the decision-making authority have?

It is important to recognize that the stakeholders referred to include not only property owners and tenants or the inhabitants of an area particularly vulnerable to flooding, but also other bodies that will have an interest in the way the decisions affecting flood management are made. If flood management is to be sustainable, it must accommodate the economic, environmental and social needs of the basin, and stakeholders reflecting these elements must have a role in the way flood management is planned and implemented.

Stakeholder participation and flood risk assessment should be inherently linked processes. This relates both to identifying who would be the most affected by floods of a certain magnitude through flood hazard mapping as well as stakeholder involvement in verifying the results of such assessments by local knowledge on past floods. The role of individuals in minimizing the damage caused by floods is central to successful flood management. The ultimate responsibility for the protection of private property normally falls on property owners, and they must be equally responsible for taking precautionary measures to minimize the damage they suffer as a result of flooding, within the context of the state or local flood defence arrangement. This is especially important if it is borne in mind that despite the fact that structural flood defences protect a property, there is still the possibility that it can be damaged should a severe flood overtop these defences.<sup>56</sup> Flood control works cannot hope to protect against floods of the greatest magnitude, and successful flood management in such circumstances will depend to a large extent on dealing with residual risks and the reaction of those affected.<sup>57</sup> The extent to which preventive measures are taken by individuals may be affected by the degree of complacency that appears to affect those in areas “protected” by structural flood defences,<sup>58</sup> and this highlights the need for such people to be kept aware of the dangers. It is also possible that those who are insured have less incentive to take preventive actions as insurance is not normally withheld if precautionary measures have not been taken.<sup>59</sup>

## *Preparedness planning*

Effective stakeholder participation in pre-flood preparedness and planning processes can be implemented at different levels through formal or informal means. The formal approach will set out the rights, obligations and powers of the public, whether individuals or particular groups, in some form of legislation. It will also detail the relevant procedures to be followed by the authority responsible for the decision to involve other parties. It may be that provisions setting out general rights of access to information and public participation are set out in dedicated legislation, with the more procedural aspects relating to specific issues being set out elsewhere.<sup>60</sup> This leaves the courts to rule on whether or not the general rights of access apply to a certain situation or not. Informal methods of encouraging participation may set out broad provisions related to taking into account the views of others. In order to ensure that an obligation to consult a particular group or organization does not become a worthless exercise, decision-making authorities should be placed under an explicit duty to take into account, or give consideration to, the views of consultees and to provide a written explanation as to why the concerns raised have been ignored or accepted. This should be accompanied by details of all the responses from consultees, which will enable the public to gauge the extent of the popularity of certain opinions. Appropriate deadlines must also be applied to the submission of responses and the making of the decision.

The question of which actors and interests should be involved in flood management planning, and which activities should consider flood management issues in their planning or daily operations, has been considered in Chapter 1 above.

In designing participatory mechanisms for flood management it is essential to enable the most flood-affected sectors of society to make their voices heard. These are traditionally the poorer sectors of society, including the elderly, women and children, that are obliged to occupy flood-prone land. Such involvement is indispensable in building the resilience of communities. Experience from flood-prone regions in South Asia indicates that the establishment of community flood management committees (CFMCs) with clearly defined institutional structures, roles and responsibilities before, during and after a flood, can be an effective platform for the participation of those most affected.<sup>61</sup> A generic layout of a CFMC, which may be formalized as a constitutive document, is illustrated in Figure 3.

In this context it should be stressed that experience indicates that resilience-building measures at the household or community level are effective means of minimizing flood losses. The role of public authorities in raising awareness among such communities is therefore of great importance.

## *Flood emergency response*

Aside from involvement in decisions regarding the planning of particular activities or programmes that may potentially have an impact on flood risk, such as pre-flood planning, the participation of local communities that are closest to the event and are the first to react is vital until outside help arrives during the flood emergency. Local volunteers may be required to contribute materials and equipment, and to take part in manual efforts in their area during flood

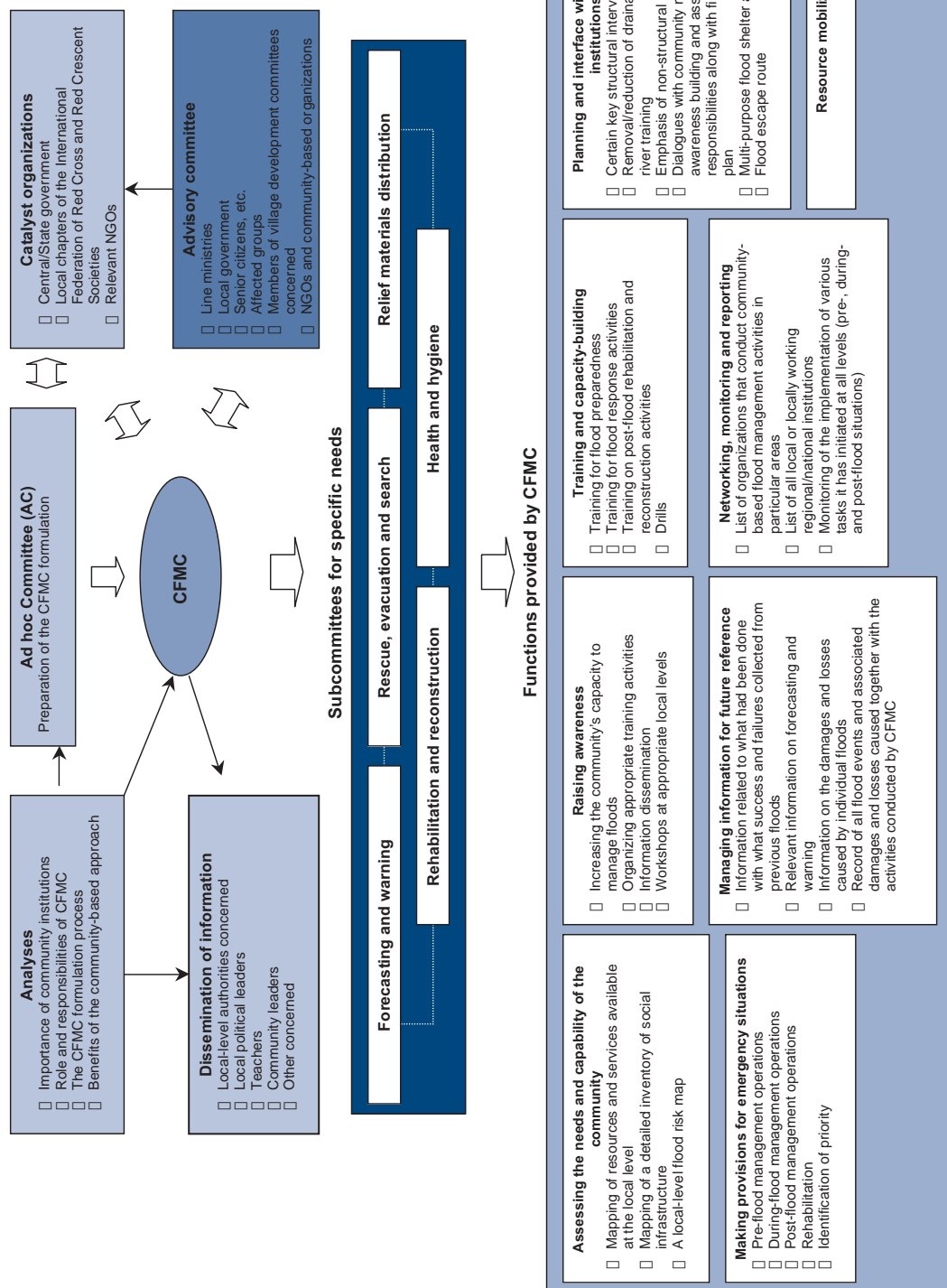


Figure 3. Set-up and functions of a community flood management committee

crises, either individually or in concert with other emergency response services. Details of the associated responsibilities would be spelled out in legislation, although it may be that such a responsibility could be tied to ownership or tenancy of properties in predefined areas, for example those in designated flood plains. In Japan, the flood defence body is organized by residents of the local community to defend and mitigate flood disaster. Additionally, it may be essential to involve representative associations at the local level, for instance WUAs, CFMCs or forestry groups, in these efforts. WUAs are likely to be organized around hydrological boundaries and will have a far greater understanding and awareness of local watercourses than those in central administrations. Additionally, CFMCs improve the self-help capacity of the people likely affected. Further information regarding the rights and responsibilities of those engaged in flood-fighting activities are provided in Chapter 4 below.

Some countries have long-lasting experience with volunteer organizations active in emergency response at the local level. One example of a decentralized disaster management approach, with the central government acting as the facilitator, is the German Federal Institution for Technical Assistance (THW), its functions being defined in federal law. The main fields of activity of THW are rescue, salvage and the rehabilitation of infrastructure. Even though it is set up as a federal institution with government financial support for technical equipment among other things, more than 600 local sections are run through a network of about 40 000 active volunteer members.<sup>62</sup>

## 4. RIGHTS, POWERS AND OBLIGATIONS

For the participative and integrated approach to become a reality, the institutions and individuals involved must have not only the necessary rights to be able to enforce such a system, but also the powers to do so. However, the appropriate obligations must also be imposed upon them so that they are accountable for their actions or inaction. It is essential that rights are associated with correlative powers and procedures for enforcement. Without this, rights are not enforceable and consequently worth little. The responsibilities and duties of institutions and individuals should be set out, and the details of the relevant functions performed by each, so that the individual roles are well defined. The establishment of clear procedures and standards adds both transparency and predictability.

From an IFM standpoint, it could be instructive to examine the nature of legal liabilities and State obligations in pre-flood, during-flood and post-flood situations. It may also be important to have a rights-based understanding of the legal framework in all three situations.

Legislation will work within the framework of the Constitution of the country. Constitutional rights stand on a different footing to rights arising from the overall statutory framework. This is an important issue, especially in countries such as South Africa and India where there is a tradition of activist interpretation of the Constitution by the judiciary. For example, a Judge of a High Court in India has argued that the right to “relief” at the time of floods ought to be accepted as a Human Right and as an integral part of the constitutionally guaranteed fundamental right to shelter and livelihood. If the rights regime is premised on such fundamental constitutional rights as above, the recognition of necessary enactments for regulatory measures to effectuate the right to relief cannot be denied.

The rights of institutions and organizations need to be examined separately from the rights available to individuals. Recent initiatives by some governments, especially those keen to promote decentralization, have sought to vest powers to formal village groups and associations, and in that context group rights have become significant. An integrated and participatory approach to flood management also indicates that there is a growing need to develop conditions under which a group entity can become a right holder so that an entity such as a legally constituted users’ association or a local self-governance unit can exercise such rights to its advantage. Besides, a more mature regime on group rights could also be critical to resolving existing and potential conflicts in pre-, during- and post-flood situations. These aspects need to be kept in mind especially while looking into state-precipitated initiatives on participatory approaches to flood management.

In addition to the rights discussed above, a number of others must be in place if Integrated Flood Management is to succeed. The agencies responsible for maintaining flood defences must have certain rights of access to the works that they supervise, and to build required infrastructure. These will often be located on private property, but without the right to have access to these works for the purposes of monitoring and maintenance, it may not be possible for an agency to fulfil its allotted role.<sup>63</sup> In general, there is a corresponding right for the property owner to claim compensation for any damage caused by the construction of such works. Where private land has to be appropriated for flood defence work or to serve for flood

detention, the expropriating authority must have adequate compulsory purchasing power for the purpose. The method of calculating the amount that may be claimed by those losing land through such a process should be set out in legislation. In some cases, accelerated land acquisition powers may be triggered by emergency situations,<sup>64</sup> although in such instances it is imperative that the circumstances in which such powers may be invoked are unambiguously set out, along with details relating to the maximum duration that such land may be held, the rights of development of that land by the acquiring power,<sup>65</sup> and rights of compensation for the affected landowner. In such circumstances it is particularly important that the exercise of authority and powers is open to both public scrutiny and challenge in instances where legal and administrative requirements have not been complied with.

Finally, with respect to the liability of public authorities, it may be the case that the body responsible for issuing flood warnings is liable in situations where flood warnings have been issued needlessly or, more importantly, where they have not been issued. This is likely to depend upon whether the issuing of warnings results from an obligation or merely a power, and to whom these warnings are directed, the public in general, particular bodies or individuals.<sup>66</sup> The liability of public authorities issuing such warnings is affected owing to the limitations of scientific knowledge of the phenomenon causing floods and should be accounted for in defining these liabilities.

The above also suggests that while rights must be in place for Integrated Flood Management to succeed, a special emphasis needs to be placed on understanding the nature and extent of exercise of these rights by the people affected. The scarce litigation on these aspects across the world suggests that there has been little invocation of rights in practice. The India Study on Legal and Institutional Aspects of Integrated Flood Management has pointed out that a review of all the High Court and Supreme Court cases in the country since 1950 indicates that litigation around the state laws in this area has been virtually nonexistent, and this despite problems evidenced almost annually with rehabilitation and flood relief works. This is an important point in the light of the fact that the rights and obligations regimes grow effectively on the ground, and not in law books alone, only when they are repeatedly exercised and invoked. The exercise of rights more than anything else contributes to a better understanding and use of rights-based approaches.

In countries where a riparian rights system is in operation with respect to water use, landowners contiguous to watercourses may be subject to additional obligations with respect to the manner in which they address issues of flood control and floodwaters. This will affect their treatment of floodwaters and the carrying out of works that may affect the watercourse channel.<sup>67</sup> In general, upstream riparians will not be responsible for floods downstream, unless they have interfered with the natural flow of the water.<sup>68</sup> Landowners are broadly entitled to protect their land from flooding, although whether this permits a certain degree of harm to be caused to other riparians may depend upon the national application of riparian rules.<sup>69</sup> In the context of flooding, the riparian regime may therefore allow owners of land abutting watercourses to take action against fellow landowners, but may also limit their right to redress.

As regards the payment of compensation to property owners who suffer harm as a result of new uses of watercourses, this may be dependent to some extent on the system of water

ownership and water use allocation rights in the state. In some jurisdictions, water use permits can be reviewed and altered to some extent if conditions demand.

The requisitioning of local inhabitants in combating floods during events has been alluded to above, but the ability to commandeer materials during post-flood operations may also be necessary where relief supplies must be transported to affected areas. Ensuring the accountability of the requisitioning authorities in such situations is of paramount importance.<sup>70</sup>

It is important to distinguish carefully between legal mapping and rights mapping when assessing the regulatory framework for flood management. Historically, most developed legal regimes tend to have separate laws dealing with a wide range of issues, from land use planning, the compulsory evacuation of land in the event of a major disaster, the suitability of lands for construction of flood works, the remission and suspension of land revenue in case of agricultural calamity, to levying of betterment contributions for recovering the cost of flood control works. It is arguable that most of the components of even the existing legal regime on the above aspects stay on paper in many jurisdictions because of the amazing lightness with which the rights flowing from the legal regime are treated. This is also because, again historically, the obligations of public authorities emanating from the rights of the people have not been insisted upon. Although there may be legal provisions regulating aspects of flood management, many of these could be laying down an essentially “may” regime, leaving ample scope for administrative discretion and not creating an inescapable and binding obligation.





# part B



## SPECIAL REQUIREMENTS FOR INTERNATIONAL WATERCOURSES



## SPECIAL REQUIREMENTS FOR INTERNATIONAL WATERCOURSES

About 263 international river basins covering almost half the world's land surface are shared by 145 countries.<sup>71</sup> Given the holistic nature of water, the activities of one State can have a major impact on the interests of other States sharing the same international watercourse.<sup>72</sup> Conflicting interests between States are further aggravated by the growing demands and pressures placed on the world's virtually finite supply of freshwater.<sup>73</sup> The potential for conflict over increasingly stressed water resources throughout the world is therefore evident.<sup>74</sup>

Within the context of flood management, the need for States to cooperate at the international watercourse level is clear. Economic activities in an upstream State, such as mining and farming, can lead to large-scale deforestation, which in turn can increase the likelihood of flooding downstream. Similarly, large-scale urbanization upstream may increase overland flow volume. Impacts downstream can include increased peak flow and a reduction in the time available for flood response. Downstream activities can also have an impact on upstream users, such as in lowland and coastal areas, where infrastructure such as roads and rail embankments can obstruct flood flows and accentuate flood conditions upstream.<sup>75</sup>

The most relevant law relating to flood management issues at the transboundary level is the law of international watercourses, which includes the only global framework treaty to address the use of rivers for purposes other than navigation. It is therefore necessary to explore whether other provisions, such as the protection of the environment and the principles enunciated in other related international conventions and protocols, could be drawn upon to establish a legal framework for IFM in transboundary basins. Among these are the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat and the Convention on Biological Diversity (see Box 5). In addition to these treaties and agreements, there is also a group of instruments that cannot be considered "law" in the strict sense, but these, called soft laws, are still relevant. Within this category are codes of conduct, guidelines, principles, recommendations, resolutions and standards.

A considerable amount of treaty practice relating to international watercourses has also evolved over the years and provides the basis for further work. In addition, a number of non-governmental expert groups in international law sought to codify and progressively develop international law relating to water resources. These include the Institute of International Law (IIL), the International Law Association (ILA) and the International Law Commission (ILC) (see Box 3).

Part B of the present publication considers what appropriate legal measures should exist between different jurisdictions in order to promote an Integrated Flood Management approach in international watercourses. Thus, this Part complements the study of legal issues relating to IFM at the national level. It first surveys the law of international watercourses in order to

ascertain the extent to which it promotes the concept of IFM. Second, it surveys treaty law relating to flood management in order to determine how flood management issues have been dealt with in State practice. Third, it reviews the relevant work of the International Law Association, and in particular its rules relating to flood control. Finally, Part B outlines the appropriate legal framework that should be considered in order to promote IFM at an international watercourse level.

### **Box 3. Forums dealing with the development of international water law**

#### **The International Law Association**

The International Law Association (ILA), established in 1872 in Brussels, is the largest organization of international lawyers with about 3 700 members throughout the world. The Rivers Committee of ILA was established in 1954, and was inspired by several serious international river disputes at the time, including the Indus, the Jordan, the Nile and the Columbia Rivers. After the completion of the Helsinki Rules in 1966 a new Water Resources Committee was established, and has been in existence, almost uninterrupted, since 1966. The Water Resources Committee has developed numerous supplemental rules to the Helsinki Rules.<sup>76</sup>

#### **The International Law Commission**

The International Law Commission (ILC) was established in 1947 by the United Nations General Assembly. The aim of ILC is to codify and progressively develop international law through drafts on certain topics of international law. ILC has 34 members who are elected by the General Assembly for five-year terms, and serve in their individual capacity.<sup>77</sup> Upon the recommendation of the General Assembly, ILC took up the study of the law of non-navigational uses of international watercourses in the 1970s. The work of ILC culminated in the adoption of its 1994 Draft Articles on the Law of the Non-navigational Uses of International Watercourses, which formed the basis of the 1997 United Nations Watercourses Convention.<sup>78</sup>

#### **The Institute of International Law**

The Institute of International Law (IIL) was established in Belgium in 1873. It has developed a number of resolutions relating to international watercourses, including the 1961 Salzburg Resolution on the Utilisation of Non-maritime International Waters (Except for Navigation).<sup>79</sup>

## 5. LAW RELATING TO INTERNATIONAL WATERCOURSES AND FLOOD MANAGEMENT

While not designed to provide an extensive survey of the law of international watercourses, this chapter seeks to highlight the key legal issues that are most relevant to flood management at the transboundary level. The chapter will deal with the application of the law, that is, scope; the substantive rules for defining a State's rights and obligations over an international watercourse; procedural rules of particular importance to flood issues, for example the exchange of data and information; the role of joint institutions; public participation; and dispute settlement. Special account will be taken of the Convention on the Law of the Non-navigational uses of International Watercourses (see Box 4), which was adopted by the United Nations General Assembly in 1997. Although not yet in force, this Convention, referred to herein as the 1997 UN Watercourses Convention, provides an authoritative statement of existing and emerging international law in the field of international watercourses. The international legal instruments related to flood management are shown in Box 5.

### Box 4. 1997 United Nations Watercourses Convention

In May 1997, the United Nations General Assembly adopted the Convention on the Law of the Non-navigational Uses of International Watercourses, an instrument originating from the work of the International Law Commission. In 1970, the Commission was asked by the General Assembly to "take up the study of the law of international watercourses with a view to its progressive development and codification". The Convention is a framework instrument which sets forth general substantive and procedural provisions to be applied by all Parties irrespective of their specific geographical location, or position vis-à-vis other watercourse States, or level of development.

The scope of the Convention covers primarily non-navigational uses of international watercourses. The latter is defined as "a system of surface and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus." Partial agreements are permitted, provided that these do not significantly adversely affect other watercourse States. Where this might occur, the potentially adversely affected State is "entitled to participate in consultations, and where necessary, negotiations, related to such agreement."

As part of the Convention, Part II on "General Principles" sets forth basic substantive rules applicable to international watercourses, having as cornerstone principles "equitable and reasonable utilization" and "Obligation not to cause significant harm". Part V deals with "Harmful Conditions and Emergency Situations" in Articles 27 ("Prevention and mitigation of harmful conditions") and 28 ("Emergency situations"). These offer guidance to States in the event of disasters, water-borne diseases, erosion, emergency situations and so forth.

### Box 5. International legal instruments related to flood management

#### Law of international watercourses

- Convention on the Protection and Use of Transboundary Watercourses and International Lakes, United Nations, 1992
- Convention on the Law of the Non-navigational Uses of International Watercourses, United Nations, 1997

#### Other related international laws

- Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971
- Convention Concerning the Protection of the World Cultural and Natural Heritage, UNESCO, 1972
- United Nations Framework Convention on Climate Change, 1992
- Convention on Biological Diversity, United Nations, 1992
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, UNECE, 1998
- London Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1999
- Charter of the United Nations

#### Non-governmental and other expert group recommendations

- Helsinki Rules, ILA Report of the Fifty-Second Conference
- International Law Association (ILA) conferences and resolutions
- International Law Commission

#### Treaty practice

#### Case law

## 5.1 Scope

The most pertinent issue is whether the law of international watercourses adequately takes into account the interaction between the causes and effects of floods. Land use practices upstream can adversely affect downstream watercourse users in numerous ways. For example, urbanization in the upper reaches of a basin can increase the likelihood and severity of floods downstream, owing to the replacement of naturally porous surfaces with roads, parking lots and the like. Similarly, the development of wetlands and flood plains, which act as natural retention basins, can induce enhanced risk and accentuate the severity of downstream flooding. In addition, flood events play a vital role in groundwater recharge and storage, particularly in alluvial flood plains.<sup>80</sup> The key issue to be considered in this section is therefore whether the law of international watercourses recognizes the above-mentioned linkages between land and water, and surface and groundwater.

The 1997 UN Watercourses Convention, while recognizing the linkages between surface and groundwater, would, *at first glance*, appear to limit the geographic scope to the “watercourse”

itself, at the exclusion of the basin as whole. A “watercourse” is defined in Article 2(a) of the Convention as “a system of surface waters and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.” Would urbanization or deforestation in an upstream State that caused increased flooding in a downstream State therefore fall under the remit of the Convention? It could be maintained that, considered alongside Articles 5 to 7 and Part IV and their reference to the protection, preservation and management of ecosystems, the Convention does apply to land–water linkages.<sup>81</sup> While the latter provisions are discussed in greater detail below, at this stage it is possible to conclude that greater clarity could have been achieved by expressly defining the geographic scope of the Convention to include land and water linkages.

In contrast to the 1997 UN Watercourses Convention, land and water linkages are *expressly* recognized within the scope of the 1966 ILA Helsinki Rules.<sup>82</sup> The ILA Helsinki Rules adopts the concept of an “international drainage basin”, which is defined as being “a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus.”<sup>83</sup> Several international agreements adopt a similar “drainage basin” definition. The 1998 Convention on the Protection of the Rhine, for instance, defines the geographic scope of the Convention as being:

- “(i.) the Rhine,
- (ii.) the ground-water interacting with the Rhine,
- (iii.) the aquatic and terrestrial ecosystems interacting with the Rhine or whose interaction with the Rhine could be re-established,
- (iv.) the Rhine catchment area, as far as its pollution adversely affects the Rhine,
- (v.) the Rhine catchment area, as far as it is of importance for issues of flood prevention and defence along the Rhine.”<sup>84</sup>

## 5.2 Substantive rules

Substantive rules define the rights and obligations of States relating to the utilization and protection of international watercourses. The key consideration in this section with respect to IFM is whether States sharing international watercourses have certain rights to the beneficial uses of floodwaters and obligations to protect fellow watercourse States from the negative impacts of flooding. Within the flood context, this section therefore analyses the rule of equitable and reasonable utilization, given its status as the primary substantive rule of international law within this field, and then considers whether and to what extent there is an obligation on States to prevent significant harm and protect aquatic ecosystems.<sup>85</sup>

### *Principle of equitable and reasonable use*

Article 5(1) of the 1997 UN Watercourses Convention provides that “Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner.” The application of the rule of equitable and reasonable utilization arises where the



quality and quantity of water in an international watercourse is insufficient to satisfy the needs of *all* watercourse States.

For instance, a situation may occur whereby State A, a downstream State, is reliant on the upstream floodwaters of an international watercourse to improve soil fertility in flood plain areas which in turn benefits agricultural uses within the State. However, a conflict might arise if State B, an upstream State, plans to develop a system of dams in the upper reaches of the watercourse, which in turn would provide much needed electricity for State B, as well as provide additional benefits for irrigation, recreation and flood control (Part I of Figure 4). If both uses were considered to be *reasonable*, and in conflict, which should prevail? Or alternatively, what use(s) would be considered to be equitable, and therefore compliant with the primary rule of international law in this field?

Determining what is equitable in such a situation involves a balancing of all relevant factors and circumstances (see Box 6). States must take into account issues such as the variability of flow, water availability, water quality, climate change and the potential impacts on aquatic and related ecosystems.<sup>86</sup> The social and economic needs of the population dependent on the watercourse will be considered, alongside the importance of the international watercourses for sustaining livelihoods. Any existing and potential uses and the effects thereof must also be taken into account. The ultimate goal in implementing equitable criteria is to ensure the

#### **Box 6. Equitable and reasonable utilization**

In accordance with Article 5 of the 1997 United Nations Watercourses Convention, utilization of an international watercourse in an equitable and reasonable manner within the meaning the article, requires taking into account all relevant factors and circumstances, including, as stated in Article 6, the following:

- Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
- The social and economic needs of the watercourse States concerned;
- The population dependent on the watercourse in each watercourse State;
- The effects of the use or uses of the watercourse in one watercourse State on other watercourse States;
- Existing and potential uses of the watercourse;
- Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to the effect;
- The availability of alternatives, of comparable value, to a particular planned or existing use.

In the application of article 5 or paragraph 1 of this article, watercourse States concerned shall, when the need arises, enter into consultations in a spirit of cooperation.

The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.



maximum benefit to each watercourse State from the uses of the waters with the minimum detriment to each.<sup>87</sup> Within the hypothetical scenario outlined below, a number of solutions may be considered equitable. For example, State B may agree to release floodwaters from its dam system at certain times of the year in order to meet the agricultural needs of State A. In addition State A may agree to pay compensation to State B for any loss of power generation resulting from the limited dam releases (Part II of Figure 4).

### ***No significant harm principle***

Closely linked to the rule of equitable and reasonable utilization is the obligation that watercourse States not cause significant harm. While the rule of equitable and reasonable utilization focuses on balancing competing interests, the focus of no significant harm is on the management of risk. Pursuant to Article 7(1) of the 1997 UN Watercourses Convention, States must, "take all appropriate measures to prevent the causing of significant harm to other watercourse States." The Convention seeks to harmonize the obligation of no significant harm with that of equitable and reasonable utilization by stating in Article 7(2) that:

*"Where significant harm nevertheless is caused to another watercourse State, the States whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard to the provisions of articles 5 and 6, in consultation with the affected States, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation."*

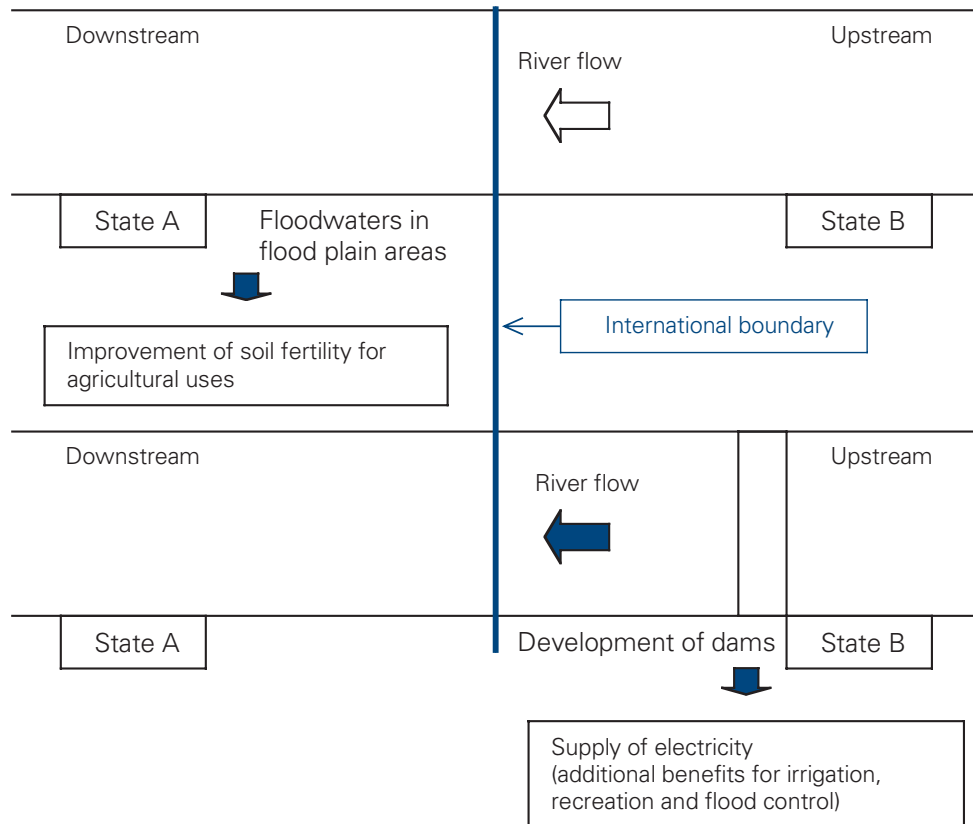
Pursuant to the latter provision, significant harm is therefore considered a factor to be taken into account when determining what is equitable and reasonable. Moreover, significant harm may be tolerated as long as it is deemed equitable. In the above-mentioned hypothetical case, State B may therefore have to endure some level of harm to agricultural uses if State A can demonstrate that the use of the dam is equitable.

What is "significant" is defined as:

*"...something more than "detectable" but need not be at the level of "serious" or "substantial". The harm must lead to a real detrimental effect on matters such as, for example, human health, industry, property, environment or agriculture in other States. Such detrimental effects must be susceptible of being measured by factual and objective standards."*<sup>88</sup>

The use of the phrase "take all appropriate measures" in the Convention is important because it makes prevention of significant harm an obligation of conduct rather than result.<sup>89</sup> The key issue is whether a watercourse State has taken the appropriate measures to prevent or mitigate the harmful effects of floods in another watercourse. While the measures deemed "appropriate" will depend on the particular factors and circumstances of the case, States are under a general obligation to "formulate policies designed to prevent significant transboundary harm or to minimize the risk thereof", as well as implement such policies through various enforcement mechanisms. The standard of measures will vary given the degree of risk of transboundary harm, and the magnitude of that harm. Similarly, in accordance with principle 11

### Part I. Unilateral solution without benefit sharing



### Part II. Solution built on equitable and reasonable utilization

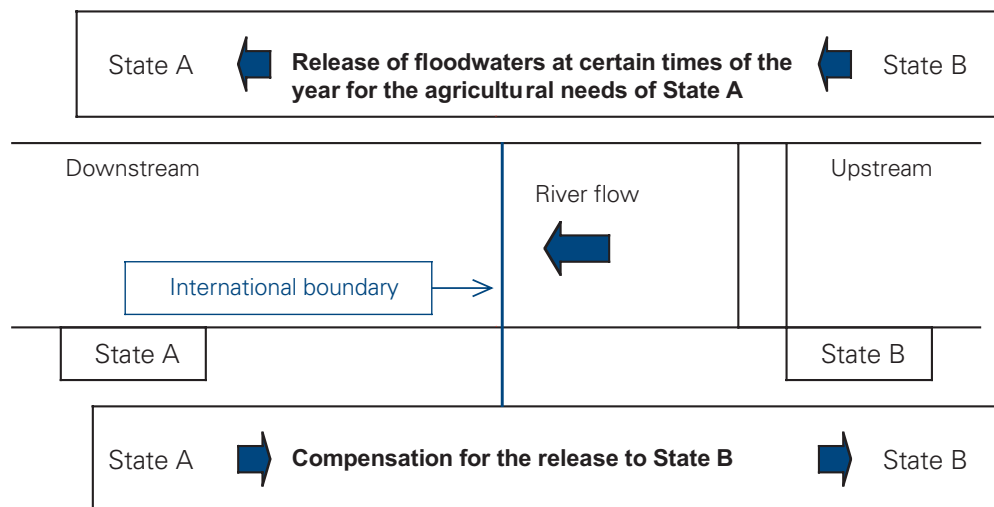


Figure 4. Hypothetical example illustrating the rule of equitable and reasonable utilization

of the Rio Declaration, States may be required to adopt differing measures depending on their stage of development.<sup>90</sup> As noted by the 2001 ILC Draft Articles, “the degree of care expected of a State with a well-developed economy and human and material resources and with highly evolved systems and structures of governance is different from States which are not so well placed.”

What measures will be deemed appropriate in the flood management context have already been discussed within Part A. In addition, the subsequent sections will consider the type of measures that should be adopted at the international level to prevent significant transboundary harm.

### *Protection of ecosystems*

Protecting ecosystems provides many benefits such as clean drinking water, food, materials, water purification, flood mitigation and recreational opportunities. Floods can benefit ecosystems, inter alia, by the rejuvenation of wetlands supporting plants, fish and animals, the enrichment of soil by river-borne sediments and nutrients beneficial to agriculture, and the replenishment of reservoirs and groundwater as reserves against water shortages.<sup>91</sup> On the other hand, contamination can occur if sediments are polluted. The key issue to be considered in this subsection is the extent to which the law of international watercourses protects ecosystems and takes into account the beneficial role of floods.

It would appear that the protection of ecosystems is an important factor to be taken into account in determining what is equitable and reasonable. As noted earlier, Article 5(1) of the 1997 UN Watercourses Convention provides that “an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with *adequate protection of the watercourse* [emphasis added]”. The Commentary to the 1994 ILC Draft Articles explains that the expression “adequate protection” is meant to cover not only measures such as those relating to conservation, security and water-related diseases, but also measures of “control in the technical, hydrological sense of the term, such as those taken to regulate flow, to control floods, pollution and erosion, to mitigate drought and to control saline intrusion.”<sup>92</sup> Article 20 of the 1997 UN Watercourses Convention states that “Watercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.”

Early international watercourse agreements focused on the protection of international watercourses from pollution. The 1938 Tanganyika and Ruanda-Urundi Agreement stipulates that “no operations of a mining or industrial nature shall be permitted by either of the contracting governments which may pollute or cause the deposit of any poisonous, noxious or polluting substances in the waters of the contiguous or success rivers.”<sup>93</sup> The increased recognition of the need to protect the environment in the latter half of the twentieth century has been reflected in international watercourses agreements.<sup>94</sup>

The need for ecosystem protection is also supported by other international agreements relating to the environment. Under the 1971 Ramsar Wetlands Convention, parties are responsible for designating suitable wetlands within their territories, of international importance and for the conservation and wise use of such wetlands. Where wetlands extend over the territories of more than one party, or where a watercourse is shared by contracting parties, States shall endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.<sup>95</sup> Pursuant to Article 4 of the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage,<sup>96</sup> States Parties are under a duty of “ensuring the identification, protection, conservation and presentation and transmission to future generations of the cultural and natural heritage.”

The 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, referred to herein as the 1992 UNECE Water Convention, provides an example of an “ecosystem” approach.<sup>97</sup> While the Convention provides a limited definition of “transboundary waters”, the aim of the Convention is to take all appropriate measures to prevent, control and reduce any transboundary impact. “Transboundary impact” is defined widely by the Convention to include:

“any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party. Such effects of the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors.”

The 1992 Convention on Biological Diversity is also relevant to the protection of ecosystems in that, where activities under a State’s jurisdiction or control are likely to significantly affect adversely the biodiversity of other States, contracting parties must promote notification, exchange of information and consultation measures.<sup>98</sup> Under the 1992 United Nations Framework Convention on Climate Change, Contracting Parties must, “develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods”, in order to adapt to the impacts of climate change.<sup>99</sup> Finally, pursuant to the 1994 United Nations Convention to Combat Desertification, the Contracting Parties seek to foster the rehabilitation, conservation and sustainable management of land and water resources.<sup>100</sup>

There is therefore adequate authority to indicate that States should pay special regard to the protection of ecosystems and wetlands when utilizing their international watercourses. In order to promote Integrated Flood Management there appears to be a need to define the scope of an international watercourse agreement broadly, to cover interactions between land and water, and linkages between surface water and groundwater. The agreements that adopt a “drainage” or “ecosystem” approach seem best suited to achieve the latter aim.

### 5.3 Exchange of data and information

Exchanging data and information provides that basis by which flood issues can be coordinated within an international watercourse. The 1997 UN Watercourses Convention includes provisions for the exchange of data and information, under Article 9:

“(1) ...watercourse States shall on a regular basis exchange readily available data and information on the condition of the watercourse, in particular that of a hydrological, meteorological, hydrogeological and ecological nature and related to the water quality as well as related forecasts.

(2) If a watercourse State is requested by another watercourse State to provide data or information that is not readily available, it shall employ its best efforts to comply with the request but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

(3) Watercourse States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner which facilitates its utilization by the other watercourse States to which it is communicated.”

The scope of Article 9 covers natural conditions of the watercourse as well as the impact of past and present human activities on natural conditions.<sup>101</sup> “Regular” exchange of data and information is considered to be “an ongoing and systematic process” of exchange, with the ILC commentary encouraging, but not obliging, watercourse States to use existing or new joint mechanisms for the purpose. In relation to “readily available” information, the Commentary to Article XXIX of the Helsinki Rules notes that, “... the basin State in question cannot be called upon to furnish information which is not pertinent and cannot be put to the expense and trouble of securing statistics and other data which are not already at hand or readily obtainable.” A further limit is provided by Article 31 of the Convention exempting “data or information vital to [a watercourse States’] defence or security” from the provisions. The legal issues raised in section 2.2 above dealing with database protection may also be relevant at the international watercourse level.

Numerous international agreements include provisions relating to the exchange of data and information between watercourse States.<sup>102</sup> The Parties to the 1995 Mekong River Basin Agreement have adopted Procedures for Data and Information Exchange and Sharing.<sup>103</sup> These procedures have been developed as “an imperative for operationalizing an effective, reliable and accessible data and information system for the Mekong River Commission and its member countries to implement the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin.” The Procedures define what is meant by data and information, establish basic principles upon which data and information is to be exchanged between the four member countries of the Mekong River Commission, and detail the types of data and information that should be supplied to the Mekong River Commission Secretariat.

## 5.4 Institutional mechanisms

Clearly the establishment of institutional mechanisms is imperative for States to cooperate effectively in managing floods. The establishment of a river basin organization is the preferred mode of cooperation. As McCaffrey notes, "management of international watercourse systems through joint institutions is not only an increasingly common phenomenon, but also a form of cooperation between watercourse States that is almost indispensable if anything approaching optimum utilisation and protection of the systems of waters is to be attained."<sup>104</sup>

The 1997 UN Watercourses Convention includes two provisions on joint mechanisms. Article 8(2) recommends that "watercourse States may consider the establishment of joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions." In addition, Article 24 provides that:

"Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.

For the purposes of this article, "management" refers, in particular, to:

- (a) Planning the sustainable development of an international watercourse and providing for the implementation of plans adopted; and
- (b) Otherwise promoting the rational and optimal utilization, protection and control of the watercourse."

Numerous agreements provide for the cooperation of activities concerning international watercourses through joint institution, although the roles and responsibilities of the institutions vary considerably.<sup>105</sup>

Article 9(1) of the 1992 UNECE Water Convention provides that:

"The Riparian Parties shall on the basis of equality and reciprocity enter into bilateral or multilateral agreements or other arrangements, where these do not yet exist, or adapt existing ones, where necessary to eliminate the contradictions with the basic principles of this Convention, in order to define their mutual relations and conduct regarding the prevention, control and reduction of transboundary impact."<sup>106</sup>

Article 9(2) of that same Convention goes on to stipulate "The agreements or arrangements... shall provide for the establishment of joint bodies." While not a clear obligation, the 2000 Revised SADC Protocol provides that "Watercourse States shall, at the request of any of them, enter into consultations concerning the management of a shared watercourse, which *may* include the establishment of a joint management mechanism [emphasis added]."<sup>107</sup>

While it would appear that States are not obliged, under international law, to establish joint institutions for international watercourses, in many cases such institutions will be the most appropriate mechanism by which States coordinate their activities and implement their obligations relating to international watercourses. From a flood management perspective, the establishment of a “joint management mechanism”, as envisaged in the 1997 UN Watercourses Convention, can play an important role in optimizing the benefits of floods while minimizing their detrimental effects.

## 5.5 Public participation

Under the 1992 UNECE Water Convention, Riparian Parties must ensure that “information on the conditions of transboundary waters, measures taken or planned to be taken to prevent, control and reduce transboundary impact, and the effectiveness of those measures, is made available to the public.”<sup>108</sup> Provisions in international water agreements providing the public with access to information are becoming common, no doubt in part due to the adoption of the 1998 Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, herein referred to as the Aarhus Convention.<sup>109</sup> Box 7 provides an introduction to this Convention.

### Box 7. The Aarhus Convention

The United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters was adopted on 25 June 1998 in the Danish city of Aarhus at the Fourth Ministerial Conference in the “Environment for Europe” process. It entered into force on 30 October 2001. The Aarhus Convention establishes a number of rights of the public (citizens and their associations) with regard to the environment. Public authorities (at the national, regional or local level) are to contribute to allowing these rights to become effective. The Convention provides for:

- The right of all to receive environmental information that is held by public authorities (“[access to environmental information](#)”). This can include information on the state of the environment, but also on policies or measures taken, or on the state of human health and safety where this can be affected by the state of the environment. Citizens are entitled to obtain this information within one month of the request and without having to say why they require it. In addition, public authorities are obliged, under the Convention, to actively disseminate environmental information in their possession;
- The right to participate from an early stage in environmental decision-making. Arrangements are to be made by public authorities to enable citizens and environmental organizations to comment on, for example, proposals for projects affecting the environment, or plans and programmes relating to the environment, these comments to be taken into due account in decision-making, and information to be provided on the final decisions and the reasons for it (“[public participation in environmental decision-making](#)”);
- The right to challenge, in a court of law, public decisions that have been made without respecting the two aforementioned rights or environmental law in general (“[access to justice](#)”).

Article 5(i) of the 1999 London Protocol on Water and Health to the 1992 UNECE Water Convention identifies the advantages of public participation in water-related matters, as follows:

“Access to information and public participation in decision-making concerning water and health is needed, inter alia, in order to enhance the quality and the implementation of the decisions, to build public awareness of issues, to give the public the opportunity to express its concerns and to enable public authorities to take due account of such concerns. Such access and participation should be supplemented by appropriate access to judicial and administrative review of relevant decisions.”<sup>110</sup>

Some international watercourse agreements also provide for a level of public participation in decision-making procedures. Under the 1997 Agreement between Estonia and the Russian Federation on Cooperation in Protection and Sustainable Use of Transboundary Waters, “the Parties encourage co-operation between agencies of executive power, local self-governments, scientific and public interests organisations, as well as other institutions in the field of sustainable development and protection of transboundary waters.”<sup>111</sup> Pursuant to the European Union Water Framework Directive, Member States are to “encourage the active involvement of all interested parties in the implementation of [the] Directive, in particular in the production, review and updating of the River Basin Management Plans.”<sup>112</sup>

## 5.6 Dispute settlement mechanisms

States are under an obligation to settle their disputes over international watercourses by peaceful means.<sup>113</sup> In the context of a State–State dispute various options are available in order for them to resolve their differences. Negotiation is the simplest and least expensive means of resolving a dispute between two parties. Third party intervention, through mechanisms such as good offices, mediation and conciliation, is also available to States as a means of resolving their disputes.<sup>114</sup> A further mechanism available to States to resolve their disputes, normally where diplomatic means fail, is to submit the dispute to arbitration or judicial settlement.<sup>115</sup>

This brief survey illustrates that flood management issues should not be considered in isolation, but should form part of a wider legal framework for the utilization and protection of an international watercourse. Moreover, such a legal framework should contain certain essential elements by which to promote Integrated Flood Management at the international watercourse level.



## 6. SELECTED TREATY PRACTICE RELATED TO FLOOD MANAGEMENT

The Food and Agriculture Organization of the United Nations (FAO) treaty database documents in excess of 3 600 bilateral and multilateral agreements relating to international watercourses dating back to 805AD.<sup>116</sup>

### 6.1 Multilateral treaty practice

Article 27 of the 1997 UN Watercourses Convention covers a variety of situations that may be harmful to international watercourses, with floods being one of them. The Article reads:

“Watercourse States shall, individually and, where appropriate, jointly, take all appropriate measures to prevent or mitigate conditions related to an international watercourse that may be harmful to other watercourse States, whether resulting from natural causes or human conduct, such as flood or ice conditions, water borne diseases, siltation, erosion, salt-water intrusion, drought or desertification.”

In the use of the term “shall, individually and, where appropriate, jointly” the Convention recognizes that in certain circumstances joint action may be required between States in order to prevent or mitigate the effects of floods. The commentary to the 1994 ILC Draft Articles notes that States can take a range of measures to prevent or mitigate the effects of floods, including “the construction of reservoirs, afforestation, or improved range of management practices.”<sup>117</sup> The Commentary goes on to note that:

“The kinds of measures that may be taken under article 27 are many and varied. They range from the regular and timely exchange of data and information that would be of assistance in preventing and mitigating the conditions in question, to taking all reasonable steps to ensure that activities in the territory of a watercourse State are so conducted as not to cause conditions that may be harmful to other watercourse States. They may also include the holding of consultations concerning the planning and implementation of joint measures, whether or not involving the construction of works, and the preparation of studies of the efficacy of measure that have been taken.”

Clearly, Article 27 should therefore be read in conjunction with other relevant Articles of the 1997 UN Watercourses Convention, and in particular Article 7 on the duty to take all appropriate measures not to cause significant harm, Articles 5, 20 and 21 on the protection and preservation of the ecosystems of international watercourse, Part III on planned measures, Article 9 on the regular exchange of information, Article 24 relating to management, Article 25 relating to the regulation of flow and Article 26 in relation to the maintenance of installations, facilities and other works.

Article 27 is further complemented by Article 28, which deals with *actual* emergency situations. “Emergency” is defined as “a situation that causes, or poses an imminent threat of causing, serious harm to watercourse States or other States and that results suddenly from natural

causes, such as floods, the breaking up of ice, landslides or earthquakes, or from human conduct, such as industrial accidents.” Pursuant to the Article, States are obligated to, without delay and by the most expeditious means available, notify potentially affected States and competent international organizations of emergency situations; cooperate with potentially affected States, and where appropriate international organizations, to prevent, mitigate and eliminate harmful effects of the emergency; and, where necessary, jointly develop contingency plans for responding to emergencies, in cooperation, where appropriate, with other potentially affected States and competent international organizations. Competent international organizations may include a joint institution established by the States to coordinate their activities relating to an international watercourse. In many cases a joint institution may be the most appropriate organization to develop early warning systems and coordinate response efforts.<sup>118</sup>

In relation to responses to actual emergency situations, no comprehensive multilateral treaty exists. Under the auspices of the International Federation of Red Cross and Red Crescent Societies (IFRC), a survey of existing treaty law did however identify about 140 treaties that addressed at least in part the issue of disaster response between States.<sup>119</sup> The survey noted that the majority of treaties at the bilateral level had been concluded by European nations, and there was only limited treaty practice elsewhere. The IFRC study concluded that international disaster response law remains disparate and inconclusive. In addition, the study identified a number of areas that were inadequately regulated or absent from treaties, including entry requirements, working permits, freedom of movement, status of personnel and specific immunities, recognition of professional expertise, information exchange, treatment of consignments, transport in the requesting State, custom tariffs, and distribution and use of relief.

## 6.2 Regional treaty practice

In 1992 UNECE adopted the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, which entered into force in 1996.<sup>120</sup> The Convention, adopted by 34 UNECE countries and the European Community, has been highly influential in promoting cooperation over transboundary waters in Europe, particularly in assisting States in Eastern Europe, the Caucasus and Central Asia since the break-up of the former Union of Soviet Socialist Republics. Flood issues are not dealt with directly by the Convention, although as noted above, many of the provisions of the Convention are relevant to various aspects of transboundary flood management.

With regard to emergency situations, Article 14 of the 1992 UNECE Water Convention obliges States to notify each other about any critical situation that may have transboundary impact. Furthermore, where appropriate, parties are to establish coordinated or joint warning and alarm systems.

In addition to the provisions contained in the 1992 UNECE Water Convention relating to flood management, guidelines on sustainable flood prevention were adopted by the parties to the Convention in March 2000.<sup>121</sup> Subsequently, a UNECE task force on flood prevention, protection and mitigation, led by Germany, has analysed the effectiveness of the 2000 flood

guidelines and proposed further activities, including strengthening legal arrangements at the national and international levels; developing soft-law instruments; and enhancing capacity development in flood management activities.<sup>122</sup>

The European Union has also developed law and policy relating to flood management. In 2000, the EU adopted Directive 2000/60/EC establishing a framework for Community action in the field of water policy (EU Water Framework Directive – EUWFD). A primary purpose of the Directive, as noted in Article 1, is to contribute to mitigating the effects of floods and droughts. Within the framework of an EU Flood Action Programme, a separate directive on the assessment and management of floods (“Floods Directive”) with operational links to EUWFD has been proposed and publicly consulted with the objective to create obligations for Member States to manage risks of floods to people, property and environment by concerted, coordinated action at the river basin level and in coastal zones.<sup>123</sup>

### 6.3 Selected basin-specific treaty practice

Within Europe a number of countries have developed law and policy at the basin or sub-basin level to address flood management issues. Under the 1998 Convention on the Protection of the Rhine the contracting parties under Article 3 set the goal of “holistic flood prevention and protection, taking into account ecological requirements.”<sup>124</sup> In parallel, the parties to the Convention adopted the Rhine Action Plan on Floods in January 1998.<sup>125</sup> Similarly, a flood action plan has recently been adopted for the Danube Basin States under the auspices of the 1994 Convention on Cooperation for the Protection and Sustainable Use of the Danube River.<sup>126</sup> The Action Plan, prepared by the International Commission for the Protection of the Danube, sets out basic principles and approaches to flood management, including both structural and non-structural measures.

The 1995 Mekong River Basin Agreement was signed by the lower Mekong Basin States of Cambodia, the Lao People’s Democratic Republic, Thailand and Viet Nam on 5 April 1995. As per Article 1, the objective of the Agreement is:

*“To cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin including, but not limited to irrigation, hydro-power, navigation, flood control, fisheries, timber floating, recreation and tourism, in a manner to optimize the multiple-use and mutual benefits of all riparian and to minimize the harmful effects that might result from natural occurrences and man-made activities.”<sup>127</sup>*

The Mekong River Commission has responsibility for overseeing that the objective of the Agreement is implemented. In response to extreme flooding in the year 2000 within the Lower Mekong River Basin and the high concentration of people living in flood-prone areas, the Mekong River Basin Commission developed a flood management and mitigation programme.<sup>128</sup>

## 6.4 Other treaty practice

Only a handful of treaties are dedicated entirely, or almost entirely, to flood issues. Of these agreements most focus on flood protection and control. For example, under the 1952 Convention between the (former) Union of Soviet Socialist Republics and Romania, the parties agree *inter alia* to carry out coordinated planning and survey, exchange data and information, and build, operate and maintain appropriate flood control installations within their territories.<sup>129</sup> In the 1935 Agreement between the United States and Canada, the parties agree, "[t]hat during times of flood the sluiceways of the dam shall be sufficiently opened to ensure that the outflow from the lake shall be unobstructed by the dam, the flood water drawn off, and the water level in the lake reduced to the normal regulated level of 682.70 as rapidly as possible."<sup>130</sup> Similarly, in the 1988 United States–Canada Red River Flood Control Agreement, both countries agree to carry out a joint project to construct a series of levees in order to protect settlements both in Canada and the United States.<sup>131</sup>

In a further set of "framework" treaties the contracting parties agree to develop further provisions relating to flood control mitigation and prevention. The 2002 IncoMaputo Agreement provides that, "[t]he Parties undertake to co-ordinate their actions and to develop measures to mitigate the effects of floods."<sup>132</sup> Interestingly, the agreement does not differentiate between the beneficial and the detrimental aspects of floods. Likewise, the 1998 Luso-Spanish Convention provides that "[t]he Parties shall co-ordinate their actions and create exceptional mechanisms to minimize the effects of floods."<sup>133</sup>

The Agreement between Kazakhstan and Kyrgyzstan of 2001 on the Chu and Talas Rivers obligates the Parties to "undertake joint measures to protect the water facilities of interstate use and the territories within their areas of influence from *adverse* effects of floods, mudflows and other natural phenomena [emphasis added]."<sup>134</sup> The particular joint measures required to protect the contracting parties from adverse effects of floods are not detailed.

Most commonly, flood prevention and mitigation measures are contained within general watercourse treaties.<sup>135</sup> A wide variety of measures related to flood prevention and mitigation are included in international watercourse agreements. The 1960 Indus Water Treaty, for example, requires each Party "to communicate to the other Party, as far in advance as practicable, any information it may have in regard to such extraordinary discharges of water from reservoirs and flood flows as may affect the other party."<sup>136</sup>

International watercourse agreements also contain provisions relating to the construction, operation and maintenance of works related to flood control. The 1982 Convention between France and Belgium obliges States to establish, operate and maintain certain works to facilitate the draining of floodwaters on the River Lys.<sup>137</sup> Another common feature international watercourse agreement relating to flood issues relates to flood forecasting and warning. The Luso-Spanish Convention, for example, obliges States to declare "flood warning situations", and immediately convey information to previously determined competent authorities in the other State.<sup>138</sup>

Of the treaties surveyed, possibly the only one that specifically recognizes the beneficial aspects of floods is the 1926 Agreement between Portugal and South Africa regulating the Kunene River.<sup>139</sup> The Preamble to the treaty refers to the need to protect the natural overflow of the river for the benefit of native tribes. In addition, part of the remit of the Commission established under the Agreement was to ensure sufficient water for the purpose of *inundation*.

## 7. CONTRIBUTIONS OF THE INTERNATIONAL LAW ASSOCIATION ON FLOOD MANAGEMENT

The International Law Association (ILA) has made a significant contribution to international law relating to water resources.<sup>140</sup> The most notable contribution of the ILA is its 1966 Helsinki Rules on the Uses of the Water of International Rivers,<sup>141</sup> which have been hugely influential in the development of watercourse agreements, especially in Africa, Asia and Latin America.<sup>142</sup> While flood issues were not directly dealt with in the Helsinki Rules, ILA subsequently adopted a Resolution on flood control in 1972,<sup>143</sup> referred to as 1972 New York Rules, which contained eight Articles, which are largely based on treaty practice relating to floods.

The 1972 New York Rules suggest a number of measures that States should consider when implementing measures to prevent or mitigate the detrimental effects of floods. The relevant provisions are not obligatory but rather recommendatory, largely no doubt owing to the intention to avoid a “one size fits all” approach. According to ILA, cooperative measures that should be considered by basin States include the following:

- “(a) collection and exchange of data;
- (b) preparation of surveys, investigations and studies and their mutual exchange;
- (c) planning and designing of relevant measures;
- (d) execution of flood control measures;
- (e) operation and maintenance of works;
- (f) flood forecasting and communication of flood warnings; and
- (g) setting up of a regular information service charged to transmit the height of water levels and the discharge quantities.”<sup>144</sup>

While the above provisions focused on the cooperative measures that States should jointly consider adopting, the 1972 New York Rules also considered the separate responsibilities that should be placed on States within their own territory.<sup>145</sup>

The above provisions emphasize a State’s right to utilize an international watercourse so long as its activities do not unreasonably interfere with the object of flood control.

In relation to the collection and exchange of relevant data, the preparation of surveys, investigations and studies, flood forecasting and communication of flood warnings, and setting up of regular information services, the 1972 New York Rules state that the costs will be borne jointly by the basin States.<sup>146</sup> For special works undertaken in the territory of one basin State at the request of another basin States, the cost of such works will be borne by the requesting State unless agreed otherwise.<sup>147</sup>

In relation to the rights and responsibilities of States in the event or likelihood of flooding the 1972 New York Rules<sup>148</sup> provide for flood forecasting and early warnings, and the setting up of a regular information service charged to transmit the height of water levels and the discharges.

Article 7 of the 1972 New York Rules recognizes the fact that floods can occur “by the forces of nature, by heavy rains, by snow melting, by earthquakes, etc.”<sup>149</sup> The Article therefore limits liability for damage caused by floods to occurrences where the damage is substantial, and the State has acted or failed to act in a manner that “could be reasonably expected under the circumstances.”<sup>150</sup>

An important point to note about the 1972 New York Rules is that they limit the definition of “floods” to “the rising of water levels which would have *detrimental effects* on life and property in co-basin States [emphasis added].”<sup>151</sup> Similarly, “flood control” is defined as “taking all appropriate steps to protect land areas from floods or to minimize damage therefrom.”<sup>152</sup> The 1972 New York Rules only deal with the negative aspects of flooding and issues of cooperative management of transboundary floods among States are largely precluded. The definition is in marked contrast to that contained in the UNESCO-WMO *International Glossary of Hydrology*,<sup>153</sup> which defines a flood as a “[r]ise, usually brief, in the water level in a stream to a peak from which the water level recedes at a slower rate.”

Most recently, in August 2004, ILA adopted its Berlin Rules on Water Resources.<sup>154</sup> The Berlin Rules, which include a revised version of the provisions contained in the 1972 New York Rules that cover both international and national waters, seek to build upon the earlier work of ILA, and deal directly with flood issues.<sup>155</sup> In relation to pre-flood issues the 2004 Berlin Rules contain reference to similar measures as outlined above, with the inclusion of “joint contingency plans” for responding to foreseeable flood conditions.<sup>156</sup> However, the merit of the Berlin Rules in representing existing international law is debated.<sup>157</sup>



# part C



## ANALYSIS OF EXISTING NATIONAL LEGAL REGIME FOR FLOOD MANAGEMENT





## 8. THE RAPID LEGAL ASSESSMENT TOOL

The primary objective of this chapter is to provide a methodology, the Rapid Legal Assessment Tool (RLAT), which will enable a team of experts in a country:

- To test the existing legal frameworks for compatibility with the concept of Integrated Flood Management;
- To initiate and guide an appropriate reform process.

RLAT broadly prescribes the steps that could be used by States as a first step towards establishing or reforming a legal framework as part of the enabling environment for Integrated Flood Management. The application of RLAT will require a team of experts within a country drawn from the areas of policymaking, law and hydrology/water engineering. The output from applying RLAT should form the input for a wider consultation to draw out concrete recommendations for reforms (involving relevant ministries or at a national conference with the broadest possible stakeholder input).

There are essentially four components of the tool. The first component, contextual background, seeks to analyse the flood issues in the country in relation to the broader legal and political environment. The second component, data gathering, provides a method by which to identify all the relevant existing laws within the country relating to flood management. Various national and international legal instruments (see Annex) that have implications on flood management issues form the source of the basic data. The third component of the tool, gap analysis, seeks to compare the provisions in the existing laws with the requirements of Integrated Flood Management, to identify gaps between what is required and what is available on the ground. The fourth component seeks to identify opportunities, limitations and constraints on the implementation process in order to guide a reform process. These components are considered in detail in the subsequent paragraphs. Figure 5 and Box 8 provide a methodological overview.

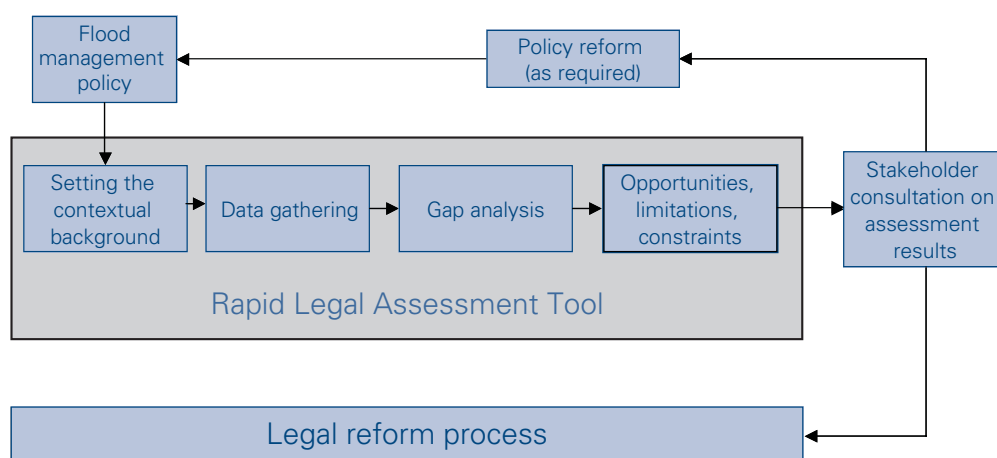


Figure 5. Overview of the legal reform process

## 8.1. Contextual background

Legal reform will undoubtedly be required in most States, but individual circumstances in each will be different. The *contextual background* includes a brief overview of flood issues as well as the overall legal and political environment within the State. This applies not only to the hydrometeorology and topography of a situation and respective susceptibilities to flood risks, but also to the constitutional context, social, cultural and traditional setting, and the economic condition and model adopted for development. The way in which the reform process proceeds also depends on the degree of democracy enjoyed by the people of the State, its social structures and rules, and legal traditions.

### Box 8. Methodological steps of the Rapid Legal Assessment Tool

#### **Preliminary step:**

Explore in detail the existing national policy framework relating to floods.

#### Contextual background

**Step 1:** Obtain a complete picture of flood issues, the role of floods and flood plains in the context of the country's development and of the overall legal–political environment.

#### Data gathering

**Step 2:** Check on bilateral and multilateral water-related and other agreements and determine whether the country is signatory to any international and regional conventions listed in Table 1.

**Step 3:** Check constitutional provisions in respect of water, land, environment and other related subjects.

**Step 4:** Check and list national and subnational laws on flood-related subjects in Table 2 with the aid of Table 3.

#### Gap analysis

**Step 5:** With the aid of Tables 4 and 5 carry out a gap analysis and identify the areas that need to be addressed.

#### Opportunities, limitations and constraints

**Step 6:** Identify opportunities, limitations and constraints of legal reform.

**Step 7:** Draw out the legal reform process based on the identified reform areas.

### **Flood issues**

The analysis of a country's flood situation is an essential first step if a case is to be made for the reform of existing legal arrangements. Revisions to the legal and regulatory framework will also demand that appropriate data are available to show a clear correlation between the need for legal changes and the flood management objectives. Although the details of such analyses cannot be presented within the scope of this publication, a short explanation about the relevance and content of this step is outlined below.

The overview of the flood situation in a country should include hydrometeorological, geomorphologic and topographic conditions and should be based on existing records of past flood events. It should also describe the significance of flood plains for the development objectives set out by the country and identify trends in flood risk, along with the socio-economic and climatologically driving forces behind trends, including both the positive and negative aspects of floods. For flood management these data come from various disciplines: environmental sciences, in particular hydrometeorology, and the social and economic fields. The data needs may vary considerably from country to country. An indicative set of data and information to be adapted to the data and resource availability of the individual case may, however, include the following (non-exclusive):

**Environmental (in particular hydrometeorological and geomorphologic):**

- Climatic conditions: rainfall patterns, temperature, evaporation, radiation, snowmelt, occurrence of permafrost and ice (jams) in drainage system;
- Geophysical conditions: morphology and conveyance of drainage system, soil types, soil moisture;
- Records of past floods: magnitude (hydrograph), frequency and type of floods, sediment loads, inundated area and inundation depths;
- Future flooding scenarios: flood hazard maps under different climatic and socio-economic development scenarios (if available).

**Social:**

- Land use patterns, in particular urbanization, deforestation and agricultural practice;
- Number of people affected by floods;
- Demographic trends, population densities in flood-prone areas in the past and in projected models;
- Warning lead times in past flood events and disaster response;
- Vulnerability of population at flood risk including future risk projection due to climate change (if available).

**Economic:**

- Economic significance of flood plains (significance for food production and livelihood provision including fisheries and industry, for infrastructure development such as transport links);
- Economic impacts of past floods on the various sectors, such as agriculture, industry, households and livelihoods, hydropower, navigation and insurance;
- Effectiveness of the existing flood management interventions (structural and non-structural).

As the focus of this RLAT is on the legal assessment and not on an exhaustive assessment of flood issues, it is recommended to use data and information available in existing literature.

### ***Legal-political background***

The form and structure of government and its international obligations will have a bearing on the way the legal and institutional reform is carried out. Different States have radically varying

procedures for the generation of legislation, or may rely on the judgements of the judiciary for guidance. The analysis of the legal–political environment should include the following:

- The system of government (e.g. republic, constitutional monarchy, revolutionary);
- The branches of government and their interrelationships (e.g. executive, legislature, judiciary);
- The degree of civic participation in government (e.g. degree of local and national democracy);
- The structure of government, including the national and local levels (e.g. federal, centralized, strong regions);
- The type of legal system applicable (e.g. civil law, common law, Islamic, customary); there may be a number of different types of systems applicable to separate aspects of flood management (e.g. water rights may be governed by customary systems, but the overall national context may be Islamic or broadly civilian);
- The type of economy (e.g. free-market, centrally administered);
- Membership in international organizations (e.g. European Union, World Trade Organization);
- Monist or dualist (i.e. are international obligations automatically incorporated into national law or not).

## 8.2 Data gathering: inventory of legal instruments related to flood management

The second component of RLAT, *data gathering*, seeks to identify all legal instruments relating to flood management, both at the national level and, if applicable, the international level. The aim here is not to analyse the legislation and regulatory context in detail, but simply to identify the relevant legal instruments and customs for flood management within certain categories. The extent to which an understanding of the international context is required will, however, vary.

### *International legal instruments*

First, it needs to be determined what legal bindings and soft law instruments exist that may have an influence on the policy decisions and actions taken at the national level. This can be achieved by researching which treaties the country in question is a party to, and the soft law instruments it has supported. The purpose is to consider the global and regional obligations that the country needs to fulfil, and how these obligations can best be adapted in the domestic context. Certain principles that govern or are laid down in the international legal instruments may be relevant and applicable, especially if the country in question has a federal political structure. These become more relevant if one or more of the national basins are transboundary in nature. The extent to which these instruments can be drawn upon is a matter of debate at a later stage. An overview of the international legal instruments that, if in force, may affect the way flood management is being carried in a country and their relevance in transboundary flood management issues are listed in Table 1. It is noted that in most cases the major lines of

national flood management policy and subsequent legislation will be shaped by domestic decision-making processes and needs. Yet, international obligations will have to be accounted for and general principles of international law, such as those formulated in the 1997 UN Watercourses Convention or the 1992 UNECE Water Convention, may be an “aid” in formulating a national legislative framework, in particular where national experience with the subject of flood or water law is lacking.

### ***National legal instruments***

Second, it needs to be determined what the country’s constitution provides for on issues related to flood management and distribution of responsibilities between various administrative units, for example that a State may be obliged to protect its citizens. Apart from the constitution, the types of legal instruments that may be used to put into effect flood management programmes vary. Those relevant to flood management need to be identified. Primary and secondary national and, as required, subnational legislation can be listed for purposes of later cross-referencing in Table 2. The “Comments” column can be utilized to indicate the status of the legislative instrument as well as its overall geographical and substantive scope.

The ease with which legal instruments may be altered will decrease as the immutability of the content increases, with a Constitution being the most difficult to change. Normally a distinction is made between primary legislation, which may be expected to address the main principles of the relevant subject matter, and secondary legislation, which would normally deal with the minutiae. The names and functions attributed to the varying types of legislation will differ between countries, but examples of primary legislation will include codes, laws, statutes, directives and ordinances. Secondary legislation might include regulations (though not in the EU context), rules, statutory instruments, decrees and orders. The matters addressed in secondary legislation are usually easier to change, therefore more rapid legislative processes may be in place to facilitate this. The difference between policy provisions and legal provisions may not be clear-cut as in theory, and may therefore require to be assessed through this tool, in particular if policy provisions at the national level have de facto law status.

Legal case laws also provide a valuable assessment of not only the existing legal ground conditions but also the adaptability of the society towards a change. Some States may rely on judicial interpretation of sacred texts, and legislation as such may therefore be less relevant. Judicial interpretation, in the form of case law, may also be important in establishing the way that legislation is applied in practice.

In addition, flood management programmes may also be governed by documents issued by regulators and local authorities. The degree to which these instruments are binding varies. For example, policy documents, guidelines and best practice documents, which govern the way that decisions are taken, might not be legally binding, but may be relevant in the event of legal action. Local authority orders and by-laws, however, are binding in character.

Integrated Flood Management essentially forms part of overall Integrated Water Resources Management, advocating the notion of ecosystem approach and pinning itself on the participation of stakeholders. As such relevant national legal instruments are not only those directly dealing with flood management or water resources, but also those that have a focus on land use, protection and conservation of ecosystems, human right to development and the participation of common stakeholders in decision-making. It is therefore important that those using this Rapid Legal Assessment Tool concentrate on gathering legal instruments *that have their focus on or affect* one or more of the subjects indicated in the first column in Table 3. The table provides a list of likely relevant areas, which need to be looked into for assessing the existing legal instrument supporting or relevant to flood management. It should be kept in mind that issues relating to flood management might also be contained in other related laws and therefore the relevance as given in the second column must be closely explored. Data gatherers would be wise to ensure that the content matches the subject rather than simply the name. It should be noted that the list of enumerated subjects is exhaustive to best assist in finding the relevant legal instruments in different subject areas, and may therefore overlap.

Finally, it should be recognized that the applicable law may not be contained only in written law. Customary law may also play a very significant role and this should be indicated under relevant subject headings.

### 8.3 Gap analysis of the existing legal framework related to flood management

The purpose of the third component of the Rapid Legal Assessment Tool is to process the data gathered above. As in the previous section, the analysis is divided into national and international aspects. An analysis with respect to the principles followed in international conventions would help put in place a conducive framework that would be of utmost importance and relevance for a better understanding between the neighbouring countries. The framework for analysis, which consists of a series of key questions related to international instruments, is listed in Table 4 and that related to national laws is provided in Table 5.

A positive answer to the key questions outlined in Tables 4 and 5 indicates that there are certain elements in the existing legal framework that could support an integrated approach to flood management. The comments column in such a case should include the status of implementation of the legal provisions and the need, if any, for updating. Cross-reference to the respective legal instrument from Tables 1 and 2 should be made wherever possible. A negative answer may hint at a gap within the law. The “Comment” column should include the possible recommendation on the desirability of changes. It should be extensively used to qualify the answer about the (non-)existence of the respective legal instrument. This could for instance include an indication about earlier legislative proposals that failed to be approved or existing laws that failed in implementation due to reasons such as lack of enforceability.

Having undertaken the above exercise, the areas desirous of reform should be readily apparent. Although the Rapid Legal Assessment Tool does not seek to predefine the outcomes, it enables States to address the most pertinent questions, allowing them to institute the most effective reforms. A separate compilation of comments taken from the last column shall form the case and argument for putting in place a legal reform process, if required. The gap analysis will also help in identifying various government departments and institutions that should be involved in subsequent stages of the legal reform process. Generally, it is reaffirmed here that the outcomes of this Rapid Legal Assessment within a group of experts should be discussed among wider groups of stakeholders to increase the reliability of the assessment and initiate stakeholder commitment for the reform process and for later implementation purposes. In this reform process it will also be important to engage the community in order to incorporate community values and traditional knowledge. As such, the results may be seen as an input for an interministerial working group or for the widest possible stakeholder forums, such as national flood management conferences.

## **8.4 Opportunities, limitations and constraints**

Where, as a result of completing the gap analysis it is shown that there may be a need to reform the existing regulatory framework, certain wider policy considerations should be taken into account. These should be identified, where possible, so that they can be considered when reforms are designed. It has to be remembered that a one size fits all mindset does not work. Legislations are drawn based on a country's particular circumstances. Model legislation that cannot be drafted in the context of local conditions should be avoided. However, it is useful to examine the work carried out at the international level, successful and unsuccessful case studies, relevant guidelines or key principles.

It is an irony and a truism that extreme flood events represent the largest political window of opportunity for changes to the legal and institutional framework for flood management. However, this will not automatically be to the betterment of the flood management system. It is a delicate balance which politicians need to maintain in their political response to a large flood event, reassuring the population and at the same time keeping in view a long-term perspective of sustainable development. As such, after an extreme flood event, with mounting public pressure for more protection from floods, it is tempting for political leaders to reassure the population by (re-)adopting a flood "control" policy, suggesting that massive public investment into flood defences (apparently more visible) could solve the problem alone, without addressing the whole array of flood management options, which are possibly less visible. It may therefore be advisable to be politically prepared for such an event in order to be able to use the political momentum and turn it into popular support for a balanced or integrated approach to flood management. In this sense, the application of this Rapid Legal Assessment Tool may be an aid in identifying legislative or institutional reform requirements before an extreme flood occurs.

It is important to create a system that is clear and unambiguous, flexible and at the same time robust for its effective implementation, compliance and enforcement. In practice, and for various reasons, it may not be immediately possible to implement the reforms identified as required in order to promote Integrated Flood Management. It could be that a State lacks the

financial or institutional capacity to design and implement the necessary reforms within the flood management sphere. A variety of legal issues, including liability for damage, may arise as a result of the reform process that need to be anticipated and addressed in the legislative framework. As a reform proposal for Integrated Flood Management will necessarily affect several line ministries, cooperation among those ministries will be a critical success factor that may in any case not be easy to provide for. Legislative reform may be hindered due to poor governance arrangements within a country, including poor law enforcement services. In the case of transboundary basins, poor relationships with other basin States also deter the process of reform.

A successful legal framework is one that is adaptive and responds to changing conditions by providing a clear sense of direction. An ongoing process of developing detailed and legally binding management plans, within the context of such clear legislative guidelines, can provide the desired adaptive capacity.



**TABLE 1. International legal instruments related to flood management**

I. GLOBAL INSTRUMENTS				
No.	Instrument (subject)	Relevance	Ratified (Yes/No)	Comment
1	Charter of the United Nations and related instruments	Pursuant to the Statute of the International Court of Justice, States may agree to submit disputes to the Court.		
2	1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses	This Convention applies to the uses of international watercourses and the protection, preservation and management related to the uses of such waters.		
3	1971 Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat	For designated watercourses, States must endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.		
4	1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage	States must ensure the identification, protection, conservation, and presentation and transmission to future generations of the cultural and natural heritage.		
5	1992 Convention on Biological Diversity	States must integrate the conservation and sustainable use of biological diversity into relevant plans and policies. States must also ensure the environmental impact assessment of proposed projects and activities that are likely to have significant adverse effects on biological diversity. Where activities under a State's jurisdiction or control are likely to significantly affect adversely the biodiversity of other States, contracting parties must promote notification, exchange of information and consultation measures.		
6	1992 United Nations Framework Convention on Climate Change	States must develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods, in order to adapt to the impacts of climate change.		
7	1994 United Nations Convention to Combat Desertification	Contracting parties should foster the rehabilitation, conservation and sustainable management of land and water resources.		
II. REGIONAL WATER- AND ENVIRONMENT-RELATED INSTRUMENTS				
A. UNECE (for example)				
1	1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes	A regional "framework" agreement under the auspices of the United Nations Economic Commission for Europe. Parties must take all appropriate measures to prevent, reduce and control transboundary impacts. The agreement is open to any State to sign.		
2	1999 UNECE Protocol on Water and Health	The agreement promotes the protection of human health and well-being, through the improvement of water management, and the prevention, control and reduction of water-related diseases.		

**TABLE 1 (continued)**

No.	Instrument (subject)	Relevance	Ratified (Yes/No)	Comment
3	1991 UNECE Convention on Environmental Impact Assessment	The agreement obliges States to take certain measures to prevent, reduce and control significant adverse transboundary environmental impact from certain activities.		
4	2003 UNECE Protocol on Strategic Environmental Assessment	The parties agree to provide for the assessment of impact on the environment of certain public plans (special regulation, water management and land use plans, urban development plans, etc.).		
5	1992 UNECE Convention on the Transboundary Effects of Industrial Accidents	The scope of the agreement covers the prevention of, and preparedness for and response to, industrial accidents capable of causing transboundary effects.		
6	2003 UNECE Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters	The objective of the agreement is to provide for a comprehensive regime for civil liability and for adequate and prompt compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters.		
7	1998 UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	Under the agreement each party is obligated to establish the appropriate mechanisms by which to guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters.		
8	2003 UNECE Protocol on Pollutant Release and Transfer Registers	The objective of this Protocol is enhancing public access to environmental information through the establishment of coherent, integrated, nationwide pollutant release and transfer registers (PRTRs).		
<b>B. European Union (as required)</b>				
1	Directive 2000/60/EC [Water Framework Directive—WFD]	An EU legal instrument that establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater within EU Member States.		
2	Directive 97/11/EC [EIA Directive]	The purpose of this Directive is to provide for the assessment of the environmental effects of those public and private projects that are likely to have significant effects on the environment (among others, significant hydraulic works, installations and structures).		
3	Directive 2003/35/EC [Amending EIA and IPPC Directive]	The objective of this Directive is to contribute to the implementation of the obligations arising under the Aarhus Convention (in particular by providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, i.e. in the EIA procedure).		

**TABLE 1 (continued)**

No.	Instrument (subject)	Relevance	Ratified (Yes/No)	Comment
4	Directive 2001/42/EC [SEA Directive]	The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that an environmental assessment is carried out of certain plans and programmes that are likely to have significant effects on the environment (among others, water management plans are subject to this Directive).		
<b>C. Watercourse or basin-specific</b>				
<b>III. BILATERAL WATER ECONOMY-RELATED INSTRUMENTS</b>				
<b>IV. OTHER RELEVANT INSTRUMENTS</b>				
<b>V. SOFT LAW INSTRUMENTS</b>				
	Declarations of intent, memorandums of understanding, etc.			

TABLE 2. National and subnational legislation related to flood management

No.	Instrument (subject)	Relevance	Comment
I. NATIONAL PRIMARY LEGISLATION			
	Water law, disaster management law, river law, etc.		
II. NATIONAL SECONDARY LEGISLATION			
	Flood management plans, etc.		
III. SUBNATIONAL LEGISLATION <sup>a</sup>			

<sup>a</sup> Particularly for federally organized States this section should also include the primary legislation that the individual subfederal administrative units have enacted.

**TABLE 3. Subject areas and their possible relevance to Integrated Flood Management**

Subject	Possible relevance (examples)	Existing (Yes/No)	Comment
<b>I. RIGHTS, POWERS AND RESPONSIBILITIES</b>			
<b>1. Constitution</b>	A. Enforceable rights for individuals, for example to healthy environment, food and employment	[If "yes", add reference number from Table 1]	[Qualify "yes/no" answer]
	B. Obligation of the State to protect its citizens from the adverse effects of natural hazards		
<b>2. Civil liability</b>	A. Rights and duties of property owners and authorities for actions before and during floods		
	B. Access to justice/dispute resolution		
	C. Enforceability of rights and obligations		
	D. Mechanisms in place to allow enforcement/accountability		
<b>3. Compulsory purchase and access</b>	A. Ability of authorities to purchase land for flood defence works/sacrificial areas prior to and during flood events		
	B. Access rights of authorities responsible for flood defence operation and maintenance, over private property		
	C. Rights of private property owners to claim compensation, etc.		
	D. Valuation of property to be purchased compulsorily		
<b>4. Penalties</b>	Penalty for damaging flood defences such as dams, levees, temporary floodwalls, etc.		
<b>II. WATER USE MANAGEMENT</b>			
<b>5. Water resources use/management settings</b>	A. Basin approach to water resources management		
	B. Spatial- and land use planning to include flood considerations		
	C. Integration of surface and groundwater management		
	D. Pollution/discharge control provisions during floods		
	E. Licensing of hydrological works		
	F. Prioritization of various water uses		

**TABLE 3 (continued)**

Subject	Possible relevance (examples)	Existing (Yes/No)	Comment
<b>6. Sewerage/drainage provision</b>	A. Integration of basin flood risk in drainage planning/design		
	B. Siting of sewage treatment plants on flood plain/prevention of flooding of such installations		
<b>7. Navigation</b>	A. Dredging regulation		
	B. Prohibitions on works affecting navigation		
<b>III. LAND USE</b>			
<b>8. Urban land use/management</b>	A. Control of development on active flood plains		
	B. Control of development on passive flood plains (especially areas protected by flood defences)		
	C. Incorporation of flood considerations in decision-making		
	D. Integration with water resources planning		
	E. Harmonization of local planning with strategic plans		
	F. Siting of key/strategic installations on flood plain		
<b>9. Agricultural/forestry use/management</b>	A. Land use practices that increase/decrease flood peaks		
	B. Land use practices that exacerbate/mitigate pollution caused by flooding (for example, storage of chemicals, use of pesticides/other compounds, slurry disposal)		
	C. Use of agricultural land as "sacrificial" land to be flooded during extreme events		
	D. Economic incentives for growing crops capable of withstanding certain depth/duration of flooding, on active flood plain		
	E. Licensing/control of logging		
<b>10. Irrigation and drainage</b>	A. Factoring basin natural drainage considerations in the alignment and design of canals/watercourses		
	B. Role of irrigation/drainage institutions in flood alleviation efforts		
	C. Provisions on standards for cross-drainage works <sup>a</sup>		

<sup>a</sup> Structural works constructed across the natural drainage system affecting their conveyance capacity, such as bridges or flood plain dwellings.

**TABLE 3 (continued)**

Subject	Possible relevance (examples)	Existing (Yes/No)	Comment
<b>11. Building control standards</b>	Adoption of flood damage minimization standards (materials, design) for new and old structures in flood hazard areas (especially flood proofing)		
<b>IV. INTEGRATION AND INSTITUTIONAL ARRANGEMENTS</b>			
<b>12. Institutions</b>	A. River basin planning institutions		
	B. Definition of roles of institutions (for example, flood management, environmental control, disaster management, local authorities) and setting out of rights, powers and obligations		
	C. Ability to fulfil role with available resources		
	D. Setting of desired standards of performance		
	E. Accountability of institutions and members		
<b>13. Meteorological and hydrological services</b>	A. Availability of hydrometeorological data (free or not)		
	B. Connections with other flood management bodies – procedures for information exchange		
	C. Rights, obligations and powers of meteorological and hydrological services provider		
	D. Liability for forecasting errors		
	E. Incorporation of climate variability and change into assessment of future flood risk		
<b>14. Strategic planning</b>	A. Integration of flood management with other relevant policy areas in decision-making at a strategic level (such as basin/river planning)		
	B. Siting and protection of key/strategic installations on flood plains		
<b>15. Disaster management/ civil defence</b>	A. Integration of all stakeholders in disaster preparedness planning at various levels		
	B. Participation of local residents in flood response efforts and preparatory activities such as drills		
	C. Roles of authorities in disaster response, triggers for evacuation, and public security in temporary shelters and evacuated areas		
	D. Role of emergency services in disaster planning and flood management planning		
	E. Compensation available for stakeholders co-opted into flood response efforts		

**TABLE 3 (continued)**

Subject	Possible relevance (examples)	Existing (Yes/No)	Comment
<b>16. Dam safety</b>	A. Standards of new dam construction		
	B. Standards of existing dam maintenance		
	C. Reservoir operation rules		
	D. Contingency planning or emergency procedures for dam failure		
<b>17. Hydropower development</b>	A. Role in dam construction and floodwater storage		
	B. Licensing within strategic planning		
	C. Role in coordinating water discharge with flood management authorities and downstream communities		
<b>18. Public awareness and stakeholder participation in decision-making processes</b>	A. Public participation in planning decision-making		
	B. Authority's responsibility to raise the awareness of the population about flood hazard areas		
	C. Stakeholder participation in decision-making, for example regarding urban development		
	D. Degree to which decision can be changed by stakeholders		
	E. Appeals regarding decisions		
<b>19. Access to information</b>	A. Rules regarding release of information to the public; rules regarding private sector openness; standards, procedures, costs		
	B. Access to flood risk/hazard data		
	C. Availability of hydrometeorological data (free or not)		
<b>20. Insurance</b>	A. Integration into planning decision-making		
	B. Availability for new developments		
	C. Availability to property owners (bundled or not)		
	D. Use of flood risk maps to assess policyholder's risk		
	E. Liability for cost of flood protection works – property owners affected or society in general?		
	F. Building code standards to encourage property owners to take flood damage minimization measures		



**TABLE 3 (continued)**

Subject	Possible relevance (examples)	Existing (Yes/No)	Comment
<b>V. ENVIRONMENT/ECOLOGICAL PROTECTION</b>			
<b>21. Nature conservation/ environmental protection/sites of special interest</b>	A. Protection of sites of special natural or archaeological interest – integration with flood planning		
	B. Use of wetlands as floodwater retention areas		
	C. Protection of aquatic ecosystems from pollution associated with floods		
	D. Animal rescue planning		
<b>22. Pollution control</b>	A. Control of sewerage systems and polluted discharges during flood events		
	B. Regulations for handling and storage of hazardous substances in flood-prone areas		
	C. Control of diffuse pollution		
	D. Construction of drains and flood considerations		
	E. Building control standards (exacerbate/minimize pollution?)		
<b>23. Erosion protection</b>	A. Role in reducing likelihood of mudslides or landslides with floods		
	B. Role in maintaining stable slopes and reducing flood risk		
	C. Role of cultivation of particular flora for slope stability/water retention capacity		
<b>24. Coastal protection (relating to the marine coast or large inland lakes)</b>	A. Construction, operation and maintenance of coastal protection works		
	B. Rights of construction on foreshore		
	C. Integration of flood risk considerations in the construction of foreshore/coastal works		
<b>25. Environmental Impact Assessment/ Strategic Environmental Assessment</b>	A. Flood considerations included?		
	B. Developments on flood plains		
	C. Incorporation of flood considerations into Strategic Environmental Assessments		

**TABLE 4. Key questions for identifying gaps with respect to existing international instruments**

	Issue and relevance	Key questions	Yes/No	Comment
<b>I</b>	<b>Scope: Refers to the geographic application of the resource, and should be clearly defined in any basin-wide agreement</b>	1. Is a drainage basin approach adopted?		
		2. Are land–water linkages recognized and clearly defined in relevant basin/sub-basin agreements?		
		3. Are linkages between surface and groundwater recognized?		
		4. Does the rule of equitable and reasonable use apply?		
<b>II</b>	<b>Substantive: Refers to the rights and obligations by which international watercourses are utilized and protected</b>	1. Is there an obligation to take all appropriate measures to prevent significant harm?		
		2. Are there provisions to protect the aquatic ecosystem?		
		3. Is there an obligation on States to regularly exchange data and information?		
<b>III</b>	<b>Procedural rules and mechanisms: Focuses on provisions that implement the substantive rights and obligations of States</b>	1. Is there an obligation for the joint monitoring and assessment of transboundary waters?		
		2. Is there an obligation on States to prepare and exchange joint surveys, investigations and studies?		
		3. Is there an obligation on States to jointly execute flood control measures?		
		4. Are States obliged to notify each other of planned measures that may have a significant adverse effect?		
		5. Must States conduct an environmental impact assessment when planning new activities?		
		6. Is there an obligation to develop joint water resources management plans?		
		7. Do individuals have a right of access to information?		
		8. Do individuals have a right to participate in the decision-making process?		
		9. Do joint mechanisms for flood forecasting and communication of flood warnings exist?		

**TABLE 4 (continued)**

	Issue and relevance	Key questions	Yes/No	Comment
<b>III</b>	<b>Procedural rules and mechanisms: Focuses on provisions that implement the substantive rights and obligations of States</b>	10. Is there a basin-wide flood action plan?		
		11. Is there a procedure for mutual assistance to mitigate the harmful effects of floods?		
		12. Does a compliance strategy exist at the basin level?		
		13. Does a basin-wide commission exist?		
<b>IV</b>	<b>Institutional arrangements: Refers to the institutions established between the States in order to cooperate over their shared international watercourses</b>	1. If in existence, do the responsibilities of the basin-wide commission include flood management?		
		2. Are States obliged to resolve their disputes through negotiation and other diplomatic means?		
<b>V</b>	<b>Dispute settlement: Refers to the procedures in place to reconcile disputes between States</b>	1. Is there an obligation to establish a joint fact-finding commission?		
		2. Is there an obligation on States to resolve their disputes through compulsory arbitration or judicial settlement?		

**TABLE 5. Key questions for identifying gaps with respect to the existing national legal framework**

	Issue and relevance	Key questions	Applicability	Comment
<b>I</b>	<b>Integration</b>	1. Is water resources management done at the basin level?		
		2. Does a mechanism for coordination exist at the basin level dealing with water resources management in general and with flood management in particular?		
		3. Is there an independent land use control regime? Do they exist for urban and for agricultural areas?		
		4. Are forestry/logging activities effectively licensed and agricultural best practices enforced?		
		5. Are international obligations incorporated in legal instruments at the national level?		
		6. Are flood management issues considered in the planning/implementation of other activities potentially affected by or affecting flood management?		
		7. Is flood insurance generally available, and is it bundled with other types of property insurance?		
		8. Are there financial incentives for incorporating flood considerations into personal/institutional behaviour?		
		9. Are ecosystem preservation provisions in place?		
		10. Do building control regulations put in place standards that minimize flood damage?		
		11. Does national planning take into account anticipated climate change impacts?		
		12. Does overall risk assessment at different administrative scales include flood hazards together with other relevant hazards?		
<b>II</b>	<b>Participation</b>	1. Does a disaster management mechanism exist?		
		2. Does it incorporate coordinated local community action plans?		
		3. Are measures in place to build flood risk awareness among those in areas where risk of flooding is increasing?		
		4. Are disaster management procedures in place, with regular exercises involving stakeholders to test/maintain effectiveness?		
		5. Are communities involved in local flood prevention and flood response efforts? To what extent?		
		6. Are all stakeholders and actors adequately involved with flood management decision-making processes at the various administrative levels?		
		7. Do land use management/planning processes involve stakeholders effectively?		

**TABLE 5 (continued)**

	Issue and relevance	Key questions	Applicability	Comment
III	<b>Information</b>	1. Are enforceable and adequate rights of access to information (including environmental information) in place?		
		2. Is there an effective mechanism with other basin States in place to provide regular and comprehensive exchange of information?		
		3. Are there measures in place to educate members of the public regarding flood risks, and their role in mitigating flood damage?		
		4. Are clear responsibilities for data collection defined with clear procedures in place for data exchange to other relevant bodies?		
		5. Are weather and hydrological monitoring networks in place and capable of providing information in adverse conditions?		
		6. Are clear lines of communication between data collector, data interpreter/forecaster, disaster management authorities and the affected public defined?		
		7. Are flood hazard maps available to the public?		
		8. Is a disaster management plan available to the public?		
		9. Are commercial and State broadcasters obligated to assist with flood warning publicity?		
		10. Are flood warnings incorporated into the overall civil defence system dealing with all hazards?		
IV	<b>Rights, powers and obligations</b>	1. Are rights of access to information (environmental information under the Aarhus Convention) enforceable?		
		2. Are there clearly defined access rights for public authorities to private land for works/inspection/maintenance?		
		3. Who bears cost of constructing/maintaining flood defences?		
		4. Are mechanisms for dispute resolution/processes (theory, practice, independence of judiciary, access, etc.) in place?		
		5. Are institutional and personal obligations and powers clearly set out without gaps, overlap or confusion? How far?		
		6. Are institutional powers commensurate with obligations, and do they have adequate resources?		
		7. Are obligations enforceable in practice through correlative rights and powers?		
		8. Do clear mechanisms exist for the enforcement of rights?		
		9. Are appeals to independent tribunals available where necessary?		

## ENDNOTES

- <sup>1</sup> See The Associated Programme on Flood Management, 2004. *Integrated Flood Management – Concept Paper*, APFM Technical Document No.1, second edition, available at [http://www.apfm.info/pdf/concept\\_paper-e.pdf](http://www.apfm.info/pdf/concept_paper-e.pdf).
- <sup>2</sup> See especially United Nations Economic Commission for Europe, 2000. *Guidelines on Sustainable Flood Prevention*, Geneva, Switzerland, available at <http://www.unece.org/env/water/publications/documents/guidelinesfloode.pdf>.
- <sup>3</sup> International Federation of Red Cross and Red Crescent Societies, 2002. *World Disasters Report – Focus on Reducing Risk*, Geneva, Switzerland.
- <sup>4</sup> APFM, *supra* note 1.
- <sup>5</sup> Intergovernmental Panel on Climate Change, 2001, *Climate Change 2001 – Synthesis Report*, Summary for Policy Makers.
- <sup>6</sup> Ministerial Declaration of the Hague on Water Security in the 21<sup>st</sup> Century. The Hague, March 2000, [www.worldwaterforum.net/ministerial/declaration.htm](http://www.worldwaterforum.net/ministerial/declaration.htm).
- <sup>7</sup> Agenda 21: A Programme for Action for Sustainable Development, Rio de Janeiro, June 1992, Report for the United Nations Conference on Environment and Development, Annex II, United Nations Doc. A/Conf.151/26 (Vol. II) 1992.
- <sup>8</sup> APFM, *supra* note 1.
- <sup>9</sup> For further discussion of the issues raised by the ethical and political dilemmas inherent in flood management planning, see Godschalk, D.R., Beatley, T., Berke, P., Brower, D.J. and Kaiser, E.J., *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*, (Washington, DC: Island Press, 1999); and Priscoli, D.J., *Participation, River Basin Organizations and Flood Management*, Workshop on Strengthening Capacity in Participatory Planning and Management for Flood Mitigation and Preparedness in Large River Basins (Bangkok, 20-23 November 2001).
- <sup>10</sup> For a useful discussion on this, and the principles underlying actions taken in situations where the precautionary limits are breached, see the Communication from the European Commission on the Precautionary Principle (COM (2000) 1), 19, available at the Eurlex website at <http://europa.eu.int/eur-lex/en/>. See also Chapters 2 and 3.
- <sup>11</sup> For more details on the precautionary principle see: The Associated Programme on Flood Management, 2006: *Environmental Aspects of Integrated Flood Management (second draft)*, available at [http://www.apfm.info/advocacy/advocacy\\_environmental.htm](http://www.apfm.info/advocacy/advocacy_environmental.htm).
- <sup>12</sup> UNECE *Guidelines on Sustainable Flood Prevention*, *supra* note 2, para.13(c).
- <sup>13</sup> See Salter, J. and Howsam, P., *The Precautionary Principle and the law on risk*, (2002), 2. Available from <http://www.cranfield.ac.uk/cuplu/papers.htm>. See also Sands, P., *Principles of International Environmental Law, Vol. I* (Manchester University Press, Manchester, 2000), 208-13 for further discussion). A precautionary approach could equally be taken with respect to protection of human life or property.
- <sup>14</sup> United Nations Framework Convention on Climate Change, 9 May 1992, 31 I.L.M. 848 (1992) United Nations Doc. A/AC. 237/18 (entered into force 21 March 1994).
- <sup>15</sup> See for example, the Plan of Implementation of the World Summit on Sustainable Development (23 September 2002, available at [www.johannesburgsummit.org](http://www.johannesburgsummit.org), paras. 26 and 66. For further information regarding IWRM, see also Global Water Partnership, TAC Background Paper no.4: *Integrated Water Resources Management* (GWP, Sweden 2000), available at [www.gwpforum.org](http://www.gwpforum.org).
- <sup>16</sup> See APFM, *supra* note 1, 11. See also: UNECE Draft Guidelines *supra* note 2; and the Communication from the European Commission on Flood Risk Management, Flood prevention, protection and mitigation (COM(2004)472 final), available from the Eurlex website at <http://europa.eu.int/eur-lex/en/>.
- <sup>17</sup> See South Africa's National Water Act, Act.36 1998, available in the Documentation section of the website for the Department for Water Affairs and Forestry at <http://www.dwaf.gov.za/>.
- <sup>18</sup> For example, see the Queensland Water Act 2000 (as reprinted 2 December 2005), available in the Legislation section of the Queensland Government website at <http://www.qld.gov.au/>.

<sup>19</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, *Official Journal L 327*, 22/12/2000 P. 0001 – 0073.

<sup>20</sup> See for example, s.26 of the South African Disaster Management Act 2002 (*available at* <http://sandmc.pwv.gov.za>), which addresses floods in the context of other types of disaster. The extent of the disaster, whether it ranks as a local, provincial or national disaster, is principally determined by a dedicated central National Disaster Management Centre (*id.*, s.23, although see also s.49, as municipal disaster management centres must determine at the first instance if a disaster is occurring or is about to take place) which has a coordinating and information gathering role with respect to disaster management and responses. Determination of a disaster, at whatever level, allows the relevant authorities to use specific emergency powers in order to address the situation – *id.*, ss.27, 41 and 55. Government responsibility for a disaster depends on the extent of the problem: national government is only primarily responsible for national-level events (*id.*, s.26), with provincial and municipal authorities presiding over provincial and local disasters (*id.*, s.40 and s.54 respectively).

<sup>21</sup> The subsidiarity principle states that matters should be handled by the lowest competent authority.

<sup>22</sup> See also Sanbongi, K., *Legislative Arrangements for the Flood Management in Japan*, case study prepared for the Associated Programme on Flood Management, 2005, *available at* [http://www.apfm.info/advocacy/advocacy\\_legal.htm](http://www.apfm.info/advocacy/advocacy_legal.htm).

<sup>23</sup> See Petrascheck, A., *Legal and Institutional Aspects of Swiss Flood Management*, case study prepared for the Associated Programme on Flood Management, 2005, *available at* [http://www.apfm.info/advocacy/advocacy\\_legal.htm](http://www.apfm.info/advocacy/advocacy_legal.htm).

<sup>24</sup> Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, *Official Journal L 197*, 21/07/2001 P. 0030 – 0037.

<sup>25</sup> See the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 no.258 (*available at* [www.opsi.gov.uk](http://www.opsi.gov.uk)), specifically rules 8.11 and 13. The criteria against which the plan or programme is to be compared are contained in Schedule 1.

<sup>26</sup> *Id.*, rule 5.

<sup>27</sup> *Id.*, see rule 18 for example.

<sup>28</sup> See, Disaster Management Act, *supra* note 20. Such coordinating bodies are also found at cantonal level in Switzerland – see Petrascheck, A., *supra* note 23.

<sup>29</sup> Disaster Management Act, *supra* note 20, s.4.

<sup>30</sup> *Id.*, s.5.

<sup>31</sup> The framework is intended to contain an extensive plan that coordinates all aspects of disaster management, with a particular focus on prevention and mitigation – *id.*, s.7.

<sup>32</sup> *Id.*, s.5.

<sup>33</sup> See for example, Makino, T. and Funaki, Y., "The Linkages between Climate Change, Flooding and Landslides, and Agriculture: an overview", 42, in "Agriculture and Land Conservation: Developing Indicators for Policy Analysis", Proceedings of Japan / OECD Expert Meeting, Kyoto, Japan, May 2003.

<sup>34</sup> See for example, in the United Kingdom, *Scottish Planning Policy 7: Planning and Flooding*, Scottish Executive (February 2004), *available at* <http://www.scotland.gov.uk/library5/planning/spp7.pdf>. It should be pointed out, however, that although this document is not in itself binding, the policy it contains is regarded as a material consideration in development planning.

<sup>35</sup> See for example, van Dijk, M.P., Figueres, C., Janssen, A., Koemans, F., Lazaroms, R., Raven, B. and Uijterlinde, R., *Success factors in self-financing local water management* (Unie van Waterschappen, Netherlands, 2003).

<sup>36</sup> The National Flood Insurance Program (NFIP) was established by the National Flood Insurance Act 1968. For further information regarding the implementation and contents of the NFIP, please see the Mitigation and Flood Insurance section of the Federal Emergency Management Agency (FEMA) at <http://www.fema.gov/>.

<sup>37</sup> For details of the system in the United States, see for example Flynn, M.T., "Using the National Flood Insurance Program and the Coastal Barrier Resource Act as models for legal Frameworks for Watershed and Coastal Regulation/

*Protection*", Proceedings of IWLRI/AWRA conference "Good Water Governance for People and Nature: What Role for Law, Institutions, Science and Finance", Dundee, August 2004. The Swiss have adopted a slightly different approach: rather than using commercial insurance companies, they require that mandatory property insurance be taken out with insurance companies owned by the cantons – see Petrascheck, A., *supra* note 23.

<sup>38</sup> See for example "Changes Are Sought in Flood Insurance" New York Times, 26 January 2006, available at <http://www.nytimes.com/>.

<sup>39</sup> Annual Review: Natural Catastrophes 2002, Munich Re, 2003, quoted in Paklina, N, "Flood Insurance" (OECD, 2003), 3 and 5, available at [www.oecd.org](http://www.oecd.org).

<sup>40</sup> The industry is not very active in developing nations. Swiss Re, for example, did only 10.68 per cent of its business in what it describes as emerging markets (i.e. Latin America, Central and Eastern Europe, South and East Asia, Middle East and Central Asia, Africa) in 2003 – see "Premium volume 2003 by continents and organisations" at [www.swissre.com](http://www.swissre.com) for further details.

<sup>41</sup> See for example the *Prevention of Environmental Pollution from Agricultural Activity* (PEPFAA) Code of Good Practice (Scottish Executive, 2005), available in the Publications section of the Scottish Executive website at [www.scotland.gov.uk](http://www.scotland.gov.uk); or the more extensive *Code of Good Agricultural Practice for the Protection of Water* (Ministry of Agriculture, Farming and Fisheries, 1998), available on the DEFRA website at [www.defra.gov.uk](http://www.defra.gov.uk).

<sup>42</sup> See for example, the requirements of the General Flood Defence Plan in: Bogdanovic, S., *Protection against detrimental effects from waters: Legal system of Serbia*, case study prepared for the Associated Programme on Flood Management, 2005, available at [http://www.apfm.info/advocacy/advocacy\\_legal.htm](http://www.apfm.info/advocacy/advocacy_legal.htm), which obliges certain authorities to provide reports to their superiors. It does not, however, contain provisions regarding the incorporation of the conclusions of these reports in future planning.

<sup>43</sup> This is set out in legislation in South Africa – see Disaster Management Act, *supra* note 20 for further details.

<sup>44</sup> See Chapter 4, "Rights, powers and obligations" for further information.

<sup>45</sup> See Chapter 4, "Rights, powers and obligations" for further details.

<sup>46</sup> For example, automated telephone warnings may be made to property owners in areas where flooding is imminent – the body responsible for issuing flood warnings, the Environment Agency, is merely under a qualified duty to take reasonable and practicable steps to issue flood warnings, without the method being specified. See Howarth, W., *Flood Defence Law* (Shaw, England, 2002), 459 and 465. See also *id.*, 457 with respect to the potential problems of issuing direct flood warnings: Howarth cites an example where only property owners in areas defined as high risk received flood warnings, despite the fact that the majority of those affected by the particular flood were not in those areas. This raises the broader issue of the importance of the accuracy of flood risk maps.

<sup>47</sup> See for example, South Africa's National Water Act, *supra* note 17, s.145 for broad duties imposed on water management institutions to make information regarding floods available.

<sup>48</sup> Meteorological Service Law (Law No. 165), 2 June 1952.

<sup>49</sup> For example, the SIC-ICWC in Central Asia (<http://www.icwc-aral.uz/>) or the International Commission for the Hydrology of the Rhine Basin (CHR) (<http://www.chr-khr.org/>).

<sup>50</sup> See, for example, Vis *et al.*, "Resilience Strategies for flood risk management in the Netherlands", *Intl. J. River Basin Management* Vol. 1, No. 1 (2003), 33. However, future risk assessment will also take account of both environmental and social factors – see DEFRA "Making Space for Water – Developing a new Government Strategy for Flood and Coastal Erosion Risk Management in England" (United Kingdom, July 2004), available at [www.defra.gov.uk](http://www.defra.gov.uk), paras. 4.7-10.

<sup>51</sup> See European Environment Agency, "Mapping the impacts of recent natural disasters and technological accidents in Europe" (Copenhagen, 2003), 8.

<sup>52</sup> Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases *Official Journal L 077, 27/03/1996 P. 0020 – 0028*. Art.1 broadly defines a database as "a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means".



<sup>53</sup> "Non-original" meaning databases which, while not original or the result of creativity, require substantial investment of time and finances to create.

<sup>54</sup> See for example the "Summary on Existing Legislation concerning Intellectual Property in Non-original Databases", Standing Committee on Copyright and Related Rights, Eighth Session, 4-8 November 2002, *available at* <http://www.wipo.int/copyright/en/meetings/index.htm#sccr>.

<sup>55</sup> For a more detailed discussion on this aspect please see: Associated Programme on Flood Management 2006, *Social Aspects and Stakeholder Involvement in Integrated Flood Management*, *available at* [http://www.apfm.info/advocacy/advocacy\\_social.htm](http://www.apfm.info/advocacy/advocacy_social.htm).

<sup>56</sup> The level of protection offered by these defences will ideally be informed by the process detailed above – see in general section 1.1 on integrating public planning processes.

<sup>57</sup> In England and Wales, the director of the Environment Agency said "[i]f you can take precautions to reduce the risk you should. Pretending you're not at risk is not a defence – it's a delusion...[A]s recent events in Europe and around the world show, no country can guarantee absolute protection against the forces of nature. In addition to our work, individuals need to take action of their own", Barbara Young, 2002, quoted in Crichton, D., "Flood Risk and Insurance in England and Wales", Benfield Hazard Research Centre Technical Paper no. 1 (March 2005), *available at* the Benfield Hazard Research Centre website at <http://www.benfieldhrc.org> (follow links through "Floods" and "Publications"), 52.

<sup>58</sup> One of the most egregious reported examples of this defence-induced apathy was in Grafton, Australia, in 2001 – for further details, see Crichton, D., "Flood Risk and Insurance in England and Wales", *supra* note 57, 53.

<sup>59</sup> This is especially the case where the excesses set by insurers are very high. Crichton suggests that there would be a greater incentive for property owners to pay greater attention to their own risk of flood damage if insurance companies were to introduce a "negative excess" that would actively reward those who took significant measures to avoid damage (*id.*, 64-5). This reflects a similar ethos to that applied in the United States in the context of the National Flood Insurance Program (*supra* note 36).

<sup>60</sup> For example, states that are implementing the UNECE Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters may approve legislation for that purpose only, as it provides a general framework of rights, powers and obligations with respect to the public and to public authorities.

<sup>61</sup> See Prasad, K. (2005), Community Approaches to Flood Management in India, prepared under the umbrella of the Associated Programme on Flood Management, *available at* [http://www.apfm.info/pdf/pilot\\_projects/manual\\_india.pdf](http://www.apfm.info/pdf/pilot_projects/manual_india.pdf).

<sup>62</sup> For more information see <http://www.thw.de/english/> (visited 2 November 2005).

<sup>63</sup> See, for instance, Bogdanovic, S., Serbia case study, *supra* note 42, 6-7, where the rights of landowners are very specifically limited with respect to the rights of access of authorities, for example. See Bengal Irrigation Act 1876 (see Prasad, K., *A Case Study on the Legal and Regulatory Framework for Flood Management in India*, study prepared for the Associated Programme on Flood Management, 2005. *available at* [http://www.apfm.info/advocacy/advocacy\\_legal.htm](http://www.apfm.info/advocacy/advocacy_legal.htm), para. 3.1), which sets out the provisions relating to the entry of canal officials on to privately owned land, along with the duties imposed upon such officials and correlative obligations to compensate owners for damage caused by access.

<sup>64</sup> See, for example, Land Acquisition Act and the Nagaland Land (Requisition and Acquisition) Act, 1965, in Prasad, K., India case study, *supra* note 63, para. 3.2.

<sup>65</sup> This might include rights to construct flood mitigation structures or to destroy existing structures which are deleterious to the flood management of the watercourse as a whole.

<sup>66</sup> For further discussion of this issue, with respect to the experience in England, see Howarth, *Flood Defence Law*, *supra* note 46, 462-6.

<sup>67</sup> *Id.*, 44.

<sup>68</sup> *Id.*, 46.

<sup>69</sup> *Id.* However, see *id.*, 46-51 for further discussion of the complexities involved in this and the balancing of the rights of riparian landowners that is necessary in assessing whether flood alleviation works are reasonable or not. See also The Law Society of Scotland, *The Laws of Scotland: the Stair Memorial Encyclopaedia*, vol. 25 (Edinburgh, 1989), para. 324.

<sup>70</sup> See however, the United Provinces Acquisition of Property (Flood Relief) Act, 1948, in Prasad, K., India case study, *supra* note 63, para.3.2, where the decisions of the authorities are beyond review, subject to the general standards of behaviour imposed upon such public authorities.

<sup>71</sup> Giordano, M.A. and Wolf, A.T., "The World's International Freshwater Agreements: Historical Developments and Future Opportunities" in UNEP, et al., *Atlas of International Freshwater Agreements 1* (UNEP, Nairobi 2002), available at <http://www.transboundarywaters.orst.edu> (visited 24 November 2004), at 2. See generally Wolf, A.T., et al., "International River Basins of the World", 15(4) *International Journal of Water Resources Development* (1999).

<sup>72</sup> An "international watercourse" can be defined as a system of surface waters and groundwaters parts of which are situated in different states, see Art. 2, Convention on the Law of Non-Navigational Uses of International Watercourses, 21 May 1997 (not yet in force), *reprinted in* 36 I.L.M. 700 (1997).

<sup>73</sup> An estimated 2.3 billion people (41 per cent of the world's population) live in water stressed river basins (Revenga, C., et al., "Pilot Analysis of Global Ecosystems – Freshwater Systems (World Resources Institute, Washington D.C. 2000), at 11). Between 1900 and 1995 global demand for water increased by over six times, largely due to population growth (United Nations Commission on Sustainable Development, *Comprehensive Assessment of the World's Freshwater, Report of the Secretary-General*, Fifth Session, United Nations Doc. E/CN.17/1997/9 (1997), [http://www.un.org/esa/sustdev/sdissues/water/water\\_documents.htm](http://www.un.org/esa/sustdev/sdissues/water/water_documents.htm) (visited 24 November 2004), at para. 42).

<sup>74</sup> See generally, McCaffrey, S.C., "Water Disputes Defined: Characteristics and Trends for Resolving Them", in The International Bureau of the Permanent Court of Arbitration, eds., *Resolution of International Water Disputes* 49 (Kluwer Law International, The Hague 2003); Wolf, A.T., "Conflict and Cooperation over International Waterways", 1 *Water Pol'y* 251 (1998).

<sup>75</sup> APFM, *supra* note 1, at 12.

<sup>76</sup> See generally, Bourne, C.B., "The International Law Association's Contribution to International Water Resources Law", in Wouters, P.K., ed., *International Water Law – Selected Writing of Professor Charles B Bourne* 233 (Kluwer Law International, The Hague 1997).

<sup>77</sup> See <http://www.un.org/law/ilc/introfra.htm> (visited 28 November 2004).

<sup>78</sup> See United Nations Draft Articles on the Law of the Non-navigational Uses of International Watercourses, in Report of the International Law Commission on the work of its forty-sixth session, UN GAOR, 49th Session, Supp. (No. 10), United Nations Doc. A/49/10 (1994), *reprinted in* [1994] 2(2) Y.B. Int'l L. Comm'n, at 88.

<sup>79</sup> See <http://www.idi-iii.org/> (visited 28 November 2004).

<sup>80</sup> APFM, *supra* note 1, at 18.

<sup>81</sup> Article 20 provides that, "Watercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses."

<sup>82</sup> The Helsinki Rules, ILA Report of the Fifty-Second Conference, Helsinki, 1966, in Bogdanovic, S., *International Law of Water Resources* (Kluwer Law International, The Hague 2001), at 99.

<sup>83</sup> *Id.*, Article II.

<sup>84</sup> Article 2, Convention on the Protection of the Rhine, Rotterdam, 22 January 1998 (entered into force 12 April 1999), *reprinted at* [http://www.dundee.ac.uk/iwlr/Research\\_Documents\\_International.html](http://www.dundee.ac.uk/iwlr/Research_Documents_International.html) (visited 18 November 2004); See also Article 1(b), Convention on the Cooperation for the Protection and Sustainable Use of the Waters of the Luso-Spanish River Basins, 20 November 1998 (entered into force 31 January 2000), *reprinted at* <http://faolex.fao.org/faolex/index.htm> (visited 18 November 2004); Article 1(1), Protocol on Shared Watercourse Systems in the Southern African Development Community Region, 28 August 1995 (entered into force 29 September 1998), *reprinted at* [http://www.dundee.ac.uk/iwlr/Research\\_Documents\\_International.html](http://www.dundee.ac.uk/iwlr/Research_Documents_International.html) (visited 18 November 2004); Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, 5 April 1995 (entered into force 5 April 1995), *reprinted in* 34 I.L.M. 864 (1995).

<sup>85</sup> The Commentary to the 1994 ILC Draft Articles concludes that: "A survey of all available evidence of general practice of States, accepted as law, in respect of non-navigational uses of international watercourses – including treaty provisions, positions taken by States in specific disputes, decisions of international courts and tribunals, statements of law prepared by intergovernmental and non-governmental bodies, the views of learned commentators and decisions of municipal courts in cognate cases – reveals that there is overwhelming support for the doctrine of equitable

utilisation as a general rule of law for the determination of rights and obligations of States in this field", *supra* note 78, at 100.

<sup>86</sup> See IWLRI, *Legal Assessment Model*, March 2003, available at <http://www.dundee.ac.uk/iwlr/> (20 November 2004).

<sup>87</sup> Commentary to the Helsinki Rules, at 104. The 1994 ILC Commentary, *supra* note 78, states that:

"[a]ttaining optimal utilisation and benefits does not mean achieving the "maximum" use, the most technologically efficient use, or the most monetarily valuable use much less short-term gain at the cost of long-term loss. Nor does it imply that the State capable of making the most efficient use of a watercourse – whether economically, in terms of avoiding waste, or in any other sense – should have a superior claims to the use thereof. Rather, it implies attaining maximum possible benefits for all watercourses States and achieving the greatest possible satisfaction of all their needs, while minimising the detriment to, or unmet needs of, each."

<sup>88</sup> Commentary to the *Draft Articles on Prevention of transboundary harm from hazardous activities*, in *Report of the International Law Commission on the Work of its Fifty-third Session*, UN GAOR, Supp. (No. 10), United Nations Doc. A/56/10, available at <http://www.un.org/law/ilc/reports/2001/2001report.htm> (visited 18 November 2004).

<sup>89</sup> See also Article 3, *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities*, in *Report of the International Law Commission on the Work of its Fifty-third Session*, UN GAOR, Supp. (No. 10), United Nations Doc. A/56/10, reprinted at [http://www.un.org/law/ilc/texts/State\\_responsibilityfra.htm](http://www.un.org/law/ilc/texts/State_responsibilityfra.htm) (visited 18 May 2005).

<sup>90</sup> Rio Declaration on Environment and Development, in *Report on the United Nations Conference on Environment and Development*, United Nations Doc. A/CONF.151/26 (Vol. I) (1992), available at <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>.

<sup>91</sup> Asian Development Bank, Technical Assistance for Support for the Mekong River Commission Flood Management Programme, December 2003, available at [http://www.adb.org/Documents/TARs/REG/tar\\_stu\\_37149.pdf](http://www.adb.org/Documents/TARs/REG/tar_stu_37149.pdf) (18 November 2004).

<sup>92</sup> Commentary to the ILC 1994 Draft Articles, *supra* note 78, at 97.

<sup>93</sup> Agreement between Belgium and the United Kingdom regarding water rights on the boundary between Tanganyika and Ruanda-Urundi, Article 30, 22 November 1934 (entered into force 19 May 1934), CXC League of Nations Treaty Series 104.

<sup>94</sup> The United Nations Conference on the Human Environment, held in 1972 at Stockholm, Sweden, was highly influential in raising awareness of environmental issues globally. The conference was to "serve as a practical means to encourage, and to provide guidelines for, action ... to improve the environment and to remedy and prevent its impairment" (*Decision to convene a United Nations Conference on the Human Environment*, United Nations General Assembly Resolution 2398(XXIII), 3 December 1968. See also *United Nations Conference on the Human Environment*, United Nations General Assembly Resolution 2581 (XXIV), 8 January 1969, United Nations Doc. A/Conf.48/14/Rev.1, reprinted in 9 I.L.M. 427 (1970).

<sup>95</sup> Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 2 February 1971 (entered into force 21 December 1975), 996 UNTS 245.

<sup>96</sup> Convention Concerning the Protection of the World Cultural and Natural Heritage, 16 November 1972 (entered into force 1 July 1975), 993 UNTS 243.

<sup>97</sup> Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 17 March 1992 (entered into force 6 October 1996), reprinted in 31 I.L.M. 1312 (1992).

<sup>98</sup> United Nations Convention on Biological Diversity, 5 June 1992 (entered into force 29 December 1992), reprinted in 31 I.L.M. 822 (1992).

<sup>99</sup> United Nations Framework Convention on Climate Change, 9 May 1992 (entered into force 24 March 1994), reprinted in 31 I.L.M. 849 (1992).

<sup>100</sup> Convention to Combat Desertification in those Countries experiencing Serious Drought and/or Desertification, Particularly in Africa, 14 October 1994 (entered into force 14 October 1994), 1954 UNTS 3 (1994).

<sup>101</sup> Tanzi, A. and Arcari, M., *The United Nations Convention on the Law of International Watercourses – A framework for sharing* (Kluwer Law International, The Hague 2001), at 195.

<sup>102</sup> See Article 6 of the UNECE Convention, *supra* note 97; Article 4 of the Convention on Wetlands of International Importance especially as Waterfowl Habitat, 2 February 1971 (entered into force 21 December 1975), 996 UNTS 245; Article 13 of the Agreement between Portugal, Mozambique and South Africa relative to the Cahora Bassa Project, 2 May 1984, *reprinted at* <http://www.fao.org/docrep/W7414B/w7414b0i.htm> (visited 12 June 2003); Article 3 of the Agreement Between Niger and Nigeria concerning the Equitable Sharing in the Development, Conservation, and Use of Their Common Water Resources, 18 July 1990 *reprinted at* <http://www.fao.org/docrep/W7414B/w7414b15.htm> (visited 12 June 2003); Article II(2) of Convention for the Establishment of the Lake Victoria Fisheries Organization, 30 June 1994 (entered into force 24 May 1996), *reprinted in* 36 I.L.M. 667 (1997); Article VI of the Treaty Between India and Pakistan regarding the use of the waters of the Indus, 19 September 1960 (entered into force 1 April 1960), 419 UNTS 125 (1960); Article 5(a) of Treaty on the Establishment and Functioning of the Joint Water Commission Between Swaziland and South Africa, 12 March 1992, *reprinted at* <http://www.fao.org/docrep/W7414B/w7414b15.htm> (visited 12 June 2003); Article 4-5 of the Luso-Spanish River Basins Convention, *supra* note 84; Article 9(j) of the Article 9(j) of the Treaty Between the United States and Mexico Relating to the Utilization of the Water of the Colorado and Tijuana Rivers and of the Rio Grande, 3 February 1944 (entered into force 8 November 1945), *reprinted at* <http://www.internationalwaterlaw.org/> (visited 12 June 2003); Article VI of the 1977 Agreement Between Bangladesh and India on Sharing of the Ganges Waters at Farakka, 5 November 1977 (entered into force 5 November 1977), *reprinted in* 17 I.L.M. 103 (1978).

<sup>103</sup> Procedures for Data and Information Exchange and Sharing, 1 November 2001 (entered into force 1 November 2001), *reprinted at* <http://www.mrcmekong.org/> (visited 16 October 2003).

<sup>104</sup> McCaffrey, S C., *Sixth Report on the Law of the Non-navigational Uses of International Watercourses*, [1990] 2(2) Y.B. Int'l L. Comm'n, at 41, United Nations Doc. A/CN.4/427 and Corr. 1, and Add. 1, at para. 7.

<sup>105</sup> See Mekong Agreement, note 84; Agreement between the governments of the Republic of Angola, the Republic of Botswana, and the Republic of Namibia on the Establishment of a Permanent Okavango River Basin Water Commission (OKACOM), 16 September 1994, *reprinted at* [http://www.dundee.ac.uk/iwlr/html/international\\_documents.htm](http://www.dundee.ac.uk/iwlr/html/international_documents.htm) (visited 12 June 2003); Part III, Convention on Cooperation for the Protection and Sustainable Use of the Danube River, 29 June 1994 (entered into force 22 October 1998), *reprinted at* [http://www.dundee.ac.uk/iwlr/Research\\_Documents\\_International.html](http://www.dundee.ac.uk/iwlr/Research_Documents_International.html) (visited 13 June 2003); Convention on the International Commission for the Protection of the Elbe, 8 October 1990 (entered into force 13 August 1993), *reprinted in* 75 Int'l Env'tl. L. 293 (1991); Convention and Statutes relating to the Development of the Chad Basin, 22 May 1964 (entered into force 15 September 1964), *reprinted at* [http://www.dundee.ac.uk/iwlr/Research\\_Documents\\_National.html](http://www.dundee.ac.uk/iwlr/Research_Documents_National.html) (visited 18 November 2004). See also Burchi, S. and Spreij, *Institutions for International Freshwater Management*, UNESCO PC-CP Series, available at <http://webworld.unesco.org/water/wwap/pccp/cd/institutions.html> (visited 20 November 2004); Administration of International Water Resources, ILA report of the Fifty-seventh Conference, Madrid, 1976, *reprinted in* Bogdanovic, *supra* note 82, at 245.

<sup>106</sup> Article 9(1), UNECE 1992 Water Convention, *supra* note 97.

<sup>107</sup> Article 4(2), Revised SADC Protocol, *supra* note 84.

<sup>108</sup> Article 16(1), 1992 UNECE Water Convention, *supra* note 97. See also Article 14, EU Water Framework Directive, *supra* note 19; Article 14, Danube Convention, *supra* note 105; Article 6, Luso-Spanish River Basin Convention, *supra* note 84.

<sup>109</sup> Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 25 June 1998 (entered into force 30 October 2001), *reprinted in* 38 I.L.M. 517 (1999). Article 1 reads:

"in order to contribute to the protection of the right of every person of present and future generations to life in an environment adequate to his or her health and well-being, each Party shall guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention."

<sup>110</sup> Article 5(j), Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 17 June 1999 (not yet in force), *reprinted at* [http://www.unece.org/env/water/text/text\\_protocol.htm](http://www.unece.org/env/water/text/text_protocol.htm) (visited 13 June 2003).

- <sup>111</sup> Agreement Between Estonian and the Russian Federation on Cooperation in Protection and Sustainable use of Transboundary Waters, 20 August 1997, *reprinted at* [http://www.envir.ee/jc/eng/ev\\_piiriveekogud\\_eng.php](http://www.envir.ee/jc/eng/ev_piiriveekogud_eng.php) (visited 20 November 2004).
- <sup>112</sup> Article 14(4), EU Water Framework Directive, *supra* note 19; *See also* Article 14, Rhine Convention, *supra* note 84; Article 6(1), Protocol on Water and Health, *supra* note 84.
- <sup>113</sup> The Charter of the United Nations provides that "All Members shall settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered." Similarly, Article 33 of the 1997 United Nations Watercourses Convention, *supra* note 72, provides that "In the event of a dispute between two or more Parties concerning the interpretation or application of the present Convention, the Parties shall, in the absence of an applicable agreement between them, seek a settlement of the dispute by peaceful means..."
- <sup>114</sup> *See* The International Bureau of the Permanent Court of Arbitration, eds., *Resolution of International Water Disputes* 49 (Kluwer Law International, The Hague 2003).
- <sup>115</sup> *See for example* Case Concerning the Gabčíkovo-Nagymaros Project (Hung. v. Slovak.), 25 September 1997, 37 I.L.M. 162 (1998).
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- <sup>119</sup> Fischer, G., *International Disaster Response Law*, Jan. 2003, *available at* <http://www.ifrc.org/what/disasters/idrl/> (visited 2 February 2005), p. 5-7.
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- <sup>122</sup> UNECE, *Possible Options to Further Develop and Strengthen a Common Framework for Flood Protection, Prevention and Mitigation (note by secretariat)*, United Nations Doc. MP.WAT/WG.1/2004/2, 27 May 2004, *available at* <http://www.unece.org/env/documents/2004/wat/sem.3/mp.wat.sem.3.2004.5e.pdf> (visited 11 April 2005). *See also* UNECE, *Report of First Meeting of the Working Group on Integrated Water Resources Management*, United Nations Doc. MP.WAT/WG.1/2004/2, 77 February 2005, *available at* <http://www.unece.org/env/documents/2004/wat/wg.1/mp.wat.wg.1.2004.2.e.pdf> (visited 11 April 2005).
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- <sup>124</sup> Article 3, Rhine Convention, *supra* note 84.
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- <sup>126</sup> Danube Convention, *supra* note 105.
- <sup>127</sup> Article 1, 1995 Mekong Agreement, *supra* note 84.
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<sup>132</sup> Article 10(1), Tripartite Interim Agreement Between Mozambique, South Africa and Swaziland for Cooperation and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses, 29 August 2002 (not yet in force), [http://www.dundee.ac.uk/iwlri/Research\\_Documents\\_International.php/](http://www.dundee.ac.uk/iwlri/Research_Documents_International.php/) (visited 18 November 2004).

<sup>133</sup> Luso-Spanish River Basin Convention, *supra* note 84.

<sup>134</sup> Article 7, Agreement between Kazakhstan and Kyrgyzstan on the Utilization of the Water Facilities of Interstate Use on the Chu and Talas Rivers, 21 January 2000, *available at* [http://www.dundee.ac.uk/iwlri/Research\\_Documents\\_International.html](http://www.dundee.ac.uk/iwlri/Research_Documents_International.html) (visited 18 November 2004); *See also* Agreement between Kazakhstan and China on Cooperation in the Use and Protection of Transboundary Rivers, 12 September 2001, *available at* [http://www.dundee.ac.uk/iwlri/Research\\_Documents\\_International.html](http://www.dundee.ac.uk/iwlri/Research_Documents_International.html) (18 November 2004) and the Framework Agreement on the Sava River Basin, 3 December 2002, [http://www.dundee.ac.uk/iwlri/Research\\_Documents\\_International.html](http://www.dundee.ac.uk/iwlri/Research_Documents_International.html) (visited 18 November 2004).

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<sup>138</sup> Article 18(2)and(3), Luso-Spanish River Basin Convention, *supra* note 84.

<sup>139</sup> Agreement between Portugal and South Africa Regulating the Use of the Waters of the Kunene River, 1 July 1926, 70 L.N.T.S. 315.



<sup>140</sup> See generally, Bourne, *supra* note 76.

<sup>141</sup> The Helsinki Rules, ILA Report of the Fifty-Second Conference, Helsinki, 1966, in Bogdanovic, S., *International Law of Water Resources* (Kluwer Law International, The Hague 2001), at 99.

<sup>142</sup> Caponera, D.A., *Principles of Water Law and Administration – National and International* (A.A. Balkema, Rotterdam 1992), at 195.

<sup>143</sup> Flood Control, ILA Report of the Fifty-Fifth Conference, New York 1972, in Bogdanovic, S., *International Law of Water Resources* (Kluwer Law International, The Hague 2001), at 147.

<sup>144</sup> *Id.*, at 151.

<sup>145</sup> Article 5, ILA New York Rules, *Id.*, at 181.

<sup>146</sup> Article 6(1), ILA New York Rules, *Id.*, at 187.

<sup>147</sup> Article 6(2), ILA New York Rules, *Id.*, at 187.

<sup>148</sup> Article 4, ILA New York Rules, *Id.*, at 179.

<sup>149</sup> ILA New York Rules, *Id.*, at 190.

<sup>150</sup> Article 7, ILA New York Rules, *Id.*, at 189.

<sup>151</sup> Article 1(1), 1972 New York Rules, *Id.*, at 150.

<sup>152</sup> Article 1(2), 1972 New York Rules, *Id.*, at 150.

<sup>153</sup> Hubert, P.J.Y., ed., *UNESCO-WMO International Glossary of Hydrology*, 2003, available at <http://www.cig.enscm.fr/~hubert/glu/aglo.htm> (visited 11 April 2005).

<sup>154</sup> Berlin Rules on Water Resources, ILA report of the Seventy-First Conference, Berlin, 2004, available at [www.ila-hq.org](http://www.ila-hq.org) (visited 28 November 2004).

<sup>155</sup> Articles 3(9), 3(11), 34 and 54, *Id.*

<sup>156</sup> Article 34, ILA Berlin Rules, *supra* note 154. Article 34, *inter alia*, reads:

- “ 3. States shall jointly develop contingency plans for responding to foreseeable flood conditions.
- 4. In addition to contingency plans, cooperation in respect to flood control shall, by agreement between affected States and when appropriate international organisations, include among other matters:
  - The collection and exchange of relevant data;
  - The preparation of surveys, investigations, studies, and flood plain maps and their mutual exchange;
  - The planning and designing of relevant measures, including flood plain management and flood control works;
  - The execution, operation, and maintenance of flood control measures;
  - Flood forecasting and communication of flood warnings;
  - Developing or strengthening necessary legislation and appropriate institutions for achieving these goals;
- and
- The setting up of a regular information service charged to transmit the height of water levels and the discharge quantities.”

<sup>157</sup> See ILA Berlin Conference 2004 - Water Resources Committee Report Dissenting Opinion, 9 August 2004, available at <http://www.internationalwaterlaw.org/IntlDocs/ILA%20Berlin%20Rules%20Dissent.htm> (30 November 2004).

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## ANNEX. TYPES OF INTERNATIONAL LEGAL INSTRUMENTS

Source: <http://untreaty.un.org/English/guide.asp>

### Treaties

The term “treaty” can be used as a common generic term or as a particular term that indicates an instrument with certain characteristics.

- (a) Treaty as a generic term: The term “treaty” has regularly been used as a generic term embracing all instruments binding at international law concluded between international entities, regardless of their formal designation. Both the 1969 Vienna Convention and the 1986 Vienna Convention confirm this generic use of the term “treaty”. The 1969 Vienna Convention defines a treaty as “an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation”. The 1986 Vienna Convention extends the definition of treaties to include international agreements involving international organizations as parties. In order to speak of a “treaty” in the generic sense, an instrument has to meet various criteria. First, it has to be a binding instrument, which indicates that the contracting parties intended to create legal rights and duties. Second, the instrument must be concluded by States or international organizations with treaty-making power. Third, it has to be governed by international law. Finally the engagement has to be in writing. Even before the 1969 Vienna Convention on the Law of Treaties, the word “treaty” in its generic sense had been generally reserved for engagements concluded in written form.
- (b) Treaty as a specific term: There are no consistent rules when state practice employs the terms “treaty” as a title for an international instrument. Usually the term “treaty” is reserved for matters of some gravity that require more solemn agreements. Their signatures are usually sealed and they normally require ratification. Typical examples of international instruments designated as “treaties” are Peace Treaties, Border Treaties, Delimitation Treaties, Extradition Treaties and Treaties of Friendship, Commerce and Cooperation. The use of the term “treaty” for international instruments has considerably declined in the last decades in favour of other terms.

### Agreements

The term “agreement” can have a generic and a specific meaning. It also has acquired a special meaning in the law of regional economic integration.

- (a) Agreement as a generic term: The 1969 Vienna Convention on the Law of Treaties employs the term “international agreement” in its broadest sense. On the one hand, it defines treaties as “international agreements” with certain characteristics. On the other hand, it employs the term “international agreements” for instruments that do not meet its definition of “treaty”. Its Art.3 refers also to “international agreements not in written form”. Although such oral agreements may be rare, they can have the same binding force as treaties, depending on the intention of the parties. An example of an oral agreement might be a promise made by the Minister of Foreign Affairs of one State to his counterpart of another State. The term “international agreement” in its generic sense consequently embraces the widest range of international instruments.
- (b) Agreement as a particular term: “Agreements” are usually less formal and deal with a narrower range of subject matter than “treaties”. There is a general tendency to apply the term “agreement” to bilateral or restricted multilateral treaties. It is employed especially for instruments of a technical or administrative character, which are signed by the representatives of government departments, but are not subject to ratification. Typical agreements deal with matters of economic, cultural, scientific and technical cooperation. Agreements also frequently deal with financial matters, such as avoidance of double taxation, investment guarantees or financial assistance. The United Nations and other international organizations regularly conclude agreements with the host country to an international conference or to a session of a representative organ of the Organization. Especially in international economic law, the term “agreement” is also used as a title for broad multilateral agreements, for example commodity agreements. The use of the term “agreement” slowly developed in the first decades of this century. At present, the majority of international instruments are designated as agreements.
- (c) Agreements in regional integration schemes: Regional integration schemes are based on general framework treaties with constitutional character. International instruments which amend this framework at a later stage, for example, accessions and revisions, are also designated as “treaties”. Instruments that are concluded within the framework of the constitutional treaty or by the organs of the regional organization are usually referred to as “agreements”, in order to distinguish them from the constitutional treaty. For example, whereas the Treaty of Rome of 1957 serves as a quasi-constitution of the European Community, treaties concluded by the EC with other

nations are usually designated as agreements. Also, the Latin American Integration Association (LAIA) was established by the Treaty of Montevideo of 1980, but the subregional instruments entered into under its framework are called agreements.

## Conventions

The term "convention" can have both a generic and a specific meaning.

- (a) Convention as a generic term: Art.38 (1) (a) of the Statute of the International Court of Justice refers to "international conventions, whether general or particular" as a source of law, apart from international customary rules and general principles of international law and, as a secondary source, judicial decisions and the teachings of the most highly qualified publicists. This generic use of the term "convention" embraces all international agreements, in the same way as does the generic term "treaty". Black letter law is also regularly referred to as "conventional law", in order to distinguish it from other sources of international law, such as customary law or the general principles of international law. The generic term "convention" thus is synonymous with the generic term "treaty".
- (b) Convention as a specific term: Whereas in the last century the term "convention" was regularly employed for bilateral agreements, currently it is generally used for formal multilateral treaties with a broad number of parties. Conventions are normally open for participation by the international community as a whole, or by a large number of states. Usually the instruments negotiated under the auspices of an international organization are entitled conventions, for example the Convention on Biological Diversity of 1992, United Nations Convention on the Law of the Sea of 1982 and Vienna Convention on the Law of Treaties of 1969. The same holds true for instruments adopted by an organ of an international organization (e.g. the 1951 ILO Convention concerning Equal Remuneration for Men and Women Workers for Work of Equal Value, adopted by the International Labour Conference or the 1989 Convention on the Rights of the Child, adopted by the United Nations General Assembly).

## Charters

The term "charter" is used for particularly formal and solemn instruments, such as the constituent treaty of an international organization. The term itself has an emotive content that goes back to the Magna Carta of 1215. Well-known recent examples are the Charter of the United Nations of 1945 and the Charter of the Organization of American States of 1952.

## Protocols

The term "protocol" is used for agreements less formal than those entitled "treaty" or "convention". The term could be used to cover the following kinds of instruments:

- (a) A protocol of signature is an instrument subsidiary to a treaty, and drawn up by the same parties. This type of protocol deals with ancillary matters such as the interpretation of particular clauses of the treaty, those formal clauses not inserted in the treaty, or the regulation of technical matters. Ratification of the treaty will normally ipso facto involve ratification of such a protocol.
- (b) An optional protocol to a treaty is an instrument that establishes additional rights and obligations to a treaty. It is usually adopted on the same day, but is of independent character and subject to independent ratification. Such protocols enable certain parties of the treaty to establish among themselves a framework of obligations that reach further than the general treaty and to which not all parties of the general treaty consent, creating a "two-tier system". The Optional Protocol to the International Covenant on Civil and Political Rights of 1966 is a well-known example.
- (c) A protocol based on a framework treaty is an instrument with specific substantive obligations that implements the general objectives of a previous framework or umbrella convention. Such protocols ensure a more simplified and accelerated treaty-making process and have been used particularly in the field of international environmental law. An example is the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer adopted on the basis of Arts.2 and 8 of the 1985 Vienna Convention for the Protection of the Ozone Layer.
- (d) A protocol to amend is an instrument that contains provisions that amend one or various former treaties, such as the Protocol of 1946 amending the Agreements, Conventions and Protocols on Narcotic Drugs.

- (e) A protocol as a supplementary treaty is an instrument which contains supplementary provisions to a previous treaty, for example the 1967 Protocol relating to the Status of Refugees to the 1951 Convention relating to the Status of Refugees.
- (f) A procès-verbal is an instrument that contains a record of certain understandings arrived at by the contracting parties.

## Declarations

The term “declaration” is used for various international instruments. However, declarations are not always legally binding. The term is often deliberately chosen to indicate that the parties do not intend to create binding obligations but merely want to declare certain aspirations. An example is the 1992 Rio Declaration. Declarations can however also be treaties in the generic sense intended to be binding at international law. It is therefore necessary to establish in each individual case whether the parties intended to create binding obligations. Ascertaining the intention of the parties can often be a difficult task. Some instruments entitled “declarations” were not originally intended to have binding force, but their provisions may have reflected customary international law or may have gained binding character as customary law at a later stage. Such was the case with the 1948 Universal Declaration of Human Rights. Declarations that are intended to have binding effects could be classified as follows:

- (a) A declaration can be a treaty in the proper sense. A significant example is the Joint Declaration between the United Kingdom and China on the Question of Hong Kong of 1984.
- (b) An interpretative declaration is an instrument that is annexed to a treaty with the goal of interpreting or explaining the provisions of the latter.
- (c) A declaration can also be an informal agreement with respect to a matter of minor importance.
- (d) A series of unilateral declarations can constitute binding agreements. A typical example are declarations under the Optional Clause of the Statute of the International Court of Justice that create legal bonds between the declarants, although not directly addressed to each other. Another example is the unilateral Declaration on the Suez Canal and the arrangements for its operation issued by Egypt in 1957, which was considered to be an engagement of an international character.

## Memorandums of understanding

A memorandum of understanding is an international instrument of a less formal kind. It often sets out operational arrangements under a framework international agreement. It is also used for the regulation of technical or detailed matters. It is typically in the form of a single instrument and does not require ratification. They are entered into either by States or international organizations. The United Nations usually concludes memorandums of understanding with Member States in order to organize its peacekeeping operations or to arrange United Nations conferences. The United Nations also concludes memorandums of understanding on cooperation with other international organizations.

## Modus vivendi

A modus vivendi is an instrument recording an international agreement of a temporary or provisional nature intended to be replaced by an arrangement of a more permanent and detailed character. It is usually made in an informal manner, and never requires ratification.

## Exchange of notes

An “exchange of notes” is a record of a routine agreement, which has many similarities with the private law contract. The agreement consists of the exchange of two documents, each of the parties being in the possession of the one signed by the representative of the other. Under the usual procedure, the accepting State repeats the text of the offering State to record its assent. The signatories of the letters may be government ministers, diplomats or departmental heads. The technique of exchange of notes is frequently resorted to either because of its speedy procedure or, at times, to avoid the process of legislative approval.





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